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Electrification Sustainability Program In South Sudan (ESP)

Cooperative Agreement No. AID-668-A-12-00002

FY 2013 Year-End Report

(Including Quarterly Report Information)

October 1 – September 30, 2013

(July 1 – September 30)

**NRECA International Ltd.
October 31, 2013**

Electrification Sustainability Program In South Sudan (ESP)

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List of Terms and Acronyms

AO	Agreement Officer
AOR	Agreement Officer Representative
CES	Central Equatoria State
CIS	Customer Information System
COP	Chief of Party
DCOP	Deputy Chief of Party
ECMP-3	Electronic Module Component Panel-Model 3
ECS	Episcopal Church of Sudan
EES	Eastern Equatoria State
EOI	Expression of Interest
ESP	Electrification Sustainability Program
JICA	Japan International Cooperation Agency
RSS	Republic of Southern Sudan
KAPECO	Kapoeta Electric Company
LBG	The Louis Berger Group
MECO	Maridi Electric Company
MOU	Memorandum of Understanding
NGOs	Non-Government Organizations
NRECA	National Rural Electric Cooperative Association
SSREP	South Sudan Rural Electrification Project
SISP	Sudan Infrastructure Service Project
SUWASA	Sustainable Water and Sanitation in Africa
UNMISS	UN Mission in South Sudan
USAID	United States Agency for International Development
VSS	Veterans Security Services
WES	Western Equatorial State
YECCO	Yei Electric Cooperative

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Executive Summary

Background

Since 2005, the U.S. Government has provided ongoing infrastructure and institutional support to strengthen power sector planning throughout South Sudan, and to initiate or improve electric service delivery in Kapoeta, Maridi, Yei and Juba. Under the South Sudan Rural Electrification Project, USAID financed design and construction of a small generation-distribution utility in Yei that has evolved into a self-sustaining municipal electric cooperative serving approximately 1,200 consumers. Thereafter, USAID financed construction of two additional market town electrification projects in Kapoeta and Maridi; these two systems began commercial operations in April, 2011 and serve approximately 500 customers – households, commercial enterprises, public institutions and NGOs – in each community.

The challenges these small utilities face are similar but not identical. In the case of Yei, the utility commercializes enough electrical energy to cover all operating expenses and has managed to finance corrective and preventative maintenance costs for the past four years. However, the staff turnover has been high, collection of payment for services remains a challenge and management still requires support to achieve long-term institutional and financial sustainability.

The two nascent utilities in Kapoeta and Maridi have not yet connected enough consumers nor do they sell enough electricity to achieve financial sustainability. The cost of generated energy is quite high, house wiring costs are still high, and there simply has not been enough time to connect enough consumers and increase sales to reach a break-even point between operating costs and revenues. In both cases, there is also a need for ongoing training and mentoring for the boards of directors, the management, and employees who work at both utilities.

On August 7, 2012 the United States Department for International Development (USAID) signed a three-year Cooperative Agreement establishing the Electrification Sustainability Program in South Sudan (ESP). The Cooperative Agreement designated the National Rural Electric Cooperative Association International Limited (NRECA) as the program partner to design and implement a capacity building and technical training program for the three, recently constructed electric generation and distribution utilities in Kapoeta, Maridi and Yei. ESP included the additional tasks of studying the potential to implement renewable energy resources into the electric generation mix of each utility specifically undertaking hydroelectric studies in Yei and Maridi (should additional funding become available); and, to complete initial evaluations and provide support to Western Equatoria State (WES) and the Republic of South Sudan (RSS) on the development of an electric utility to serve the State capital of Yambio.

This report covers the first year of the program, a period from August 8, 2012 to September 30, 2013. It summarizes ESP activities, accomplishments and challenges during the reporting period and identifies action items that will need to be addressed by NRECA International as well as issues that may require USAID attention.

Year Number One – FY 2013

The first year of the ESP saw slow but steady improvement in the operating characteristics of the three utilities and by most, if not all standards, be considered a success by any means of

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evaluation. The year saw significant strides made by the utilities in many areas of operations and fiscal sustainability. And, while there continues to be room for improvement, positive results are being realized.

Objective – Task #1 – Technical and Financial Sustainability Support

The ESP is designed to support the process of achieving long-term sustainability for the electric generation-distribution utilities of Kapoeta Electric Company (KAPECO), Maridi Electric Company (MECO) and Yei Electric Cooperative (YECO). The program assistance is geared toward providing the training and mentoring necessary to help the generation-distribution utilities establish business systems and staff that are trained to manage the business systems without external oversight; to have a technical team with the capacity to manage the day-to-day operating challenges of small, islanded, vertically integrated electric utilities, including power plant management and the operation and maintenance of the distribution system.

Following program mobilization in August/September 2012 NRECA completed a benchmark diagnostic of enterprise functionality at each utility followed by presentations of the results to the utility boards in November. The assessments were conducted by NRECA staff through direct interviews with board members, management and staff along with field observations made throughout each utility's compound and service area. The assessment included an evaluation of general management proficiency; business administration functions including accounting, financial management, commercial management and human resource systems along with the operations and maintenance functions of the generation and distribution plant, and other ancillary activities. This assessment was used to define the baseline performance of KAPECO, MECO and YECO, and to determine specific capacity building needs of each program partner. The diagnostic will be updated annually to present objective information regarding improvements made to business operations.

Following this initial evaluation of business and operation practices an assessment of the accounting procedures and financial position of the newly formed utilities in Kapoeta and Maridi was undertaken. A review of the accounting procedures and financial position revealed that, MECO in particular and to a lesser extent, KAPECO are still struggling to correctly categorize expenditures in the appropriate accounting categories, and to prepare accurate financial reports. The evaluation also highlighted the utilities' inability to generate the revenue needed to cover operating expenses. The boards of each utility developed a financial plan to move to a more fiscally responsible position.

The utility evaluations led to the development of a wide-ranging collection of formal training programs supplemented with regular monitoring of business and operation activities. The formal training process was also supplemented by a mentoring program where program specialists provided utility employees with guidance, insight and instruction on specific day to day activities.

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Formal training programs presented and the numbers of participants are listed in the table below;

Program Title	Participants	Number of Participants		Completion Date(s)
		Male	Female	
Board Training	Board Members and Managers	13	1	February 2013 June 2103
Peer to Peer Sessions	Board Members and Managers	13	1	June 2013
Customer Information Service (CIS)	Key Members of the Management and Finance Staff	10	6	December 2012
Management Training	Managers and Key Staff Members	11	4	March 2013
Leadership Training	Managers and Key Staff Members	11	4	March 2013
Human Resource Training	Managers and Key Staff Members	11	4	March 2013
Line Worker and Power Generation Training	Line Workers, Power Plant Operators and Support Staff	37	1	June 2013

Objective – Task #2 – Yei and Maridi Micro-Hydro Hybrid Generation Capacity

A second project objective is to complete pre-feasibility studies to explore the potential for development of micro- and small-hydro generation near Maridi and Yei in order to reduce the cost of power generation to MECO and YECO. At the current time this task has yet to be funded by USAID; however, NRECA has proceeded to move forward and complete a study evaluating a possible reduction in the cost of generation at both KAPECO and MECO by installing a hybrid diesel / solar generation system installation at each utility. The proposal combined with the mini-hydro options will require additional funding by USAID. In the event that USAID decides to pursue these investments, the ESP program includes an option to review the feasibility of these investments and oversee the completion of final design of micro/small hydroelectric projects as proposed.

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This is an activity in ESP that will require action at the earliest possible date. It is quite significant that, while the number of connections at Kapoeta and Maridi continue to increase and approach the number of connections originally thought to allow these utilities to achieve self-sufficiency; the point of financial break-even has still not been reached. The reason is that newly connected consumers are using very little energy, and the cost of generated power remains high.

For this reason, we believe that it would be extremely important to evaluate other renewable energy options – in addition to the hydroelectric power options proposed for in Maridi and Yei. NRECA will propose evaluate potential for wind generation in Kapoeta, and solar photovoltaic generation in both Kapoeta and Maridi.

Should the renewable energy component of ESP receive funding, NRECA recommends that these activities be fast-tracked to allow the utilities to avail of lower cost energy at the earliest possible date. Providing lower cost energy will have an immediate and lasting impact on self-sufficiency for each utility that enjoys this option.

Objective – Task #3 – Utility Evaluation and Development Support for Yambio

The third project objective is focusing on completion of an institutional and technical evaluation of the incomplete Yambio electric generation-distribution system. The ESP team engaged in a comprehensive evaluation of the engineering and construction requirements to energize the generation-distribution system, and evaluate management options to achieve sustainable operation of the utility in collaboration with WES leadership and administrative-technical staff.

While activities to evaluate the options to develop an electric utility in Yambio got off to a slow start the end of the year brought a flurry of activity. Following meetings and regular discussions held throughout the year with concerned officials of the Ministry of Physical Infrastructure including The Honorable Minister Clement Juma Mbugoniwia, the evaluation took place in August and September. The ESP team completing the technical evaluation was led by Serge Khalife, NRECA Engineering Specialist. The technical evaluation was followed by the institutional evaluation led by Laban Kariuki, NRECA Utility Planning Specialist. The technical analysis combined with the institutional analysis will serve as the base documents for the government to explore the options of completing the generation / distribution system to provide commercial electric service to this growing state capital.

While significant work has been completed in project design and construction, the generation and distribution system has not been placed in commercial operation and the components of the system are falling into disrepair. The technical analysis included an in-depth evaluation of the improvements needed to bring the current system (generation and distribution) up to safe and reliable operation standards along with exploring the expansion needs of the electric distribution system necessary to provide more complete electric service coverage to the community. The final report will include providing full cost estimates to complete the necessary upgrades.

The institutional review will examine options available to satisfy the goals of a possible public-private partnership to manage both power generation and commercialization of electric service. The institutional analysis will include an evaluation of the state government as a principal stakeholder in ownership and management of the power system, as well as to chart out a training, mentoring and support program for the resulting utility.

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Program Results and Achievements - Monitoring and Evaluation

One of the fundamental methods to measure the success of a program is to assess the increase in the number of beneficiaries to which the basic service has been extended. Using this parameter it can be concluded that ESP has been a success as the following chart points out growth at each utility has exceeded the initial year projections. This overall growth includes 208 commercial/small business consumers.

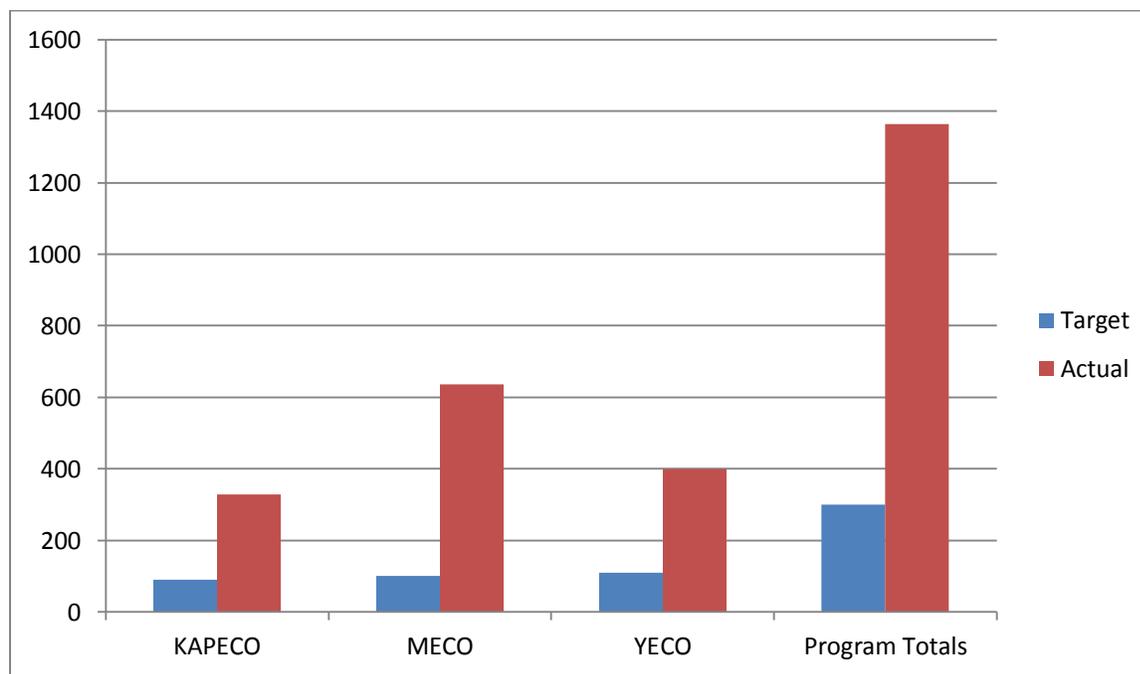


Figure 1

The chart in Figure 1 tallies the number of customers connected to the three primary beneficiary utilities - MECO, KAPECO and YECO - multiplied by four. This multiplier is used, rather than a higher number of average household size in South Sudan utilized in other analyses, because some of the electric service customers will be small commercial establishments rather than households. No attempt is made to count beneficiaries such as users of public lighting, beneficiaries of public institutions and NGOs, etc. The indicator therefore provides a conservative estimate of beneficiaries of improved services. (The baseline and targets were determined following utility diagnostics performed in November 2012.)

The increase of 328 beneficiaries in KAPECO is 24% over the baseline and includes 89 commercial / small business accounts. The increase of 636 beneficiaries in MECO represents a 41% increase and includes 66 commercial / small business accounts. The 400 beneficiaries in YECO amount to 9% increase in the baseline amounts and includes 53 commercial / small business accounts.

Each utility experienced positive results in the utility cost recovery while KAPECO and YECO also experienced improvement in the expenditure management and operating margins. MECO saw their expenses increase which had a negative effect on these ratios. While collection rates

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and line losses have decreased each utility needs to improve cost containment and increase sales. These mixed results indicate that ESP has succeeded in making a positive impact on the utilities' financial and operation performance but more work needs to be done to provide for long-term sustainability. The process, output and outcome indicators for the program can be found on pages 37-41 of this report.

The year-end project report and quarterly report were both due to be submitted to USAID on the same date (October 31, 2013). At USAID's suggestion, NRECA agreed to combine the two reports and develop a year-end project report which includes activity from the final quarter. The following year-end report highlights the various activities of ESP since inception and the contributions made to the overall program success in FY 2013.

Year in Review – Activity / Task Summary

Project Mobilization

Mobilization of the ESP management team began immediately following the signing of the cooperative agreement in August 2012. Robert Ellinger the designated Chief of Party (COP) contacted team members to confirm participation and availability for project implementation and FY 13 activities. The project Work Plan, Monitoring and Evaluation Plan, along with the Branding and Marketing Plan were developed and submitted to USAID for review and comment.

The team mobilized to South Sudan in September establishing the principal program office in Maridi with assigned personnel in Kapoeta. A project kick-off meeting was held at USAID headquarters on September 13 and included an introduction of key staff followed by a detailed review of the project plans. NRECA revised the project Work Plan, Monitoring and Evaluation Plan, and Branding and Marketing Plan following the receipt of USAID comments and edits. The final submissions received USAID approval on October 17.

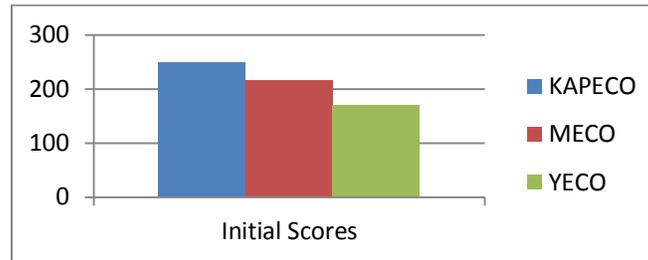
Benchmark Diagnostics

NRECA completed a benchmark diagnostic of enterprise functionality at each utility in October followed by presentations of the results to the utility boards in November. The assessments were conducted by NRECA staff through direct interviews with board members, management and staff along with field observations throughout each utility's compound and service area. The assessment included an evaluation of general management proficiency, administrative functions including accounting, financial management and human resource systems, commercial management, operations and maintenance functions of the generation and distribution plant, and other ancillary activities. This assessment was used to define the baseline performance of KAPECO, MECO and YECO, and to determine specific capacity building needs of each program partner. The diagnostic will be updated annually to present objective information regarding improvements made to business operations.

The evaluation produced a diagnostic score card compiled for each utility and shown below. The baseline scoring for the three utilities was as follows; KAPECO - 250, MECO - 215, and YECO - 171 (out of a total of approximately 426 total points).

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KAPECO scored highest in the areas of Board of Directors, Operations and Maintenance, Organization and Human Resources while the following areas were identified for improvement; Engineering, Finance and Managing Director. MECO scores were high in the areas of Managing Director, Board of Directors, Customer Service and Human Resources while the following areas for improvement were identified; Engineering, Finances and Organization. YECO scored high in the areas of Board of Directors and Accounting with a need to improve in Engineering, Operations and Maintenance, Finance, Customer Service and Organization.

All three utilities scored low in the Engineering evaluation which could be expected because they do not have an engineer on staff and we fully expect that this will not change in the immediate future. The ESP team worked with the utility staffs and specialists to build upon the strengths and improve the weaknesses exposed at the utilities in the evaluation.

Financial Evaluation of KAPECO and MECO

A review of the accounting procedures and financial position revealed that, MECO in particular and to a lesser extent, KAPECO are still struggling to correctly categorize expenditures in the appropriate accounting categories, and to prepare accurate financial reports. The evaluation also highlighted the utilities' inability to generate the revenue needed to cover operating expenses. In an effort to evaluate how best to address these challenges, the NRECA/ESP project team, assisted by Kent Wick, completed an analysis of KAPECO and MECO financial reports for the period 2012-2013.

This analysis highlighted two issues of immediate concern. Firstly, the review confirmed that there remain challenges to accurately record transactions in the general ledger module of the CIS and to employ the CIS reporting module to prepare relevant and accurate monthly financial reports. Moreover, the tariff structure that was designed three years ago needed to be revised to allow a higher level of cost recovery, given the dramatic increase in fuel cost that occurred in 2012 between the completion of Sudan Infrastructure Services Project (SISP) Task Order 3 and the beginning of ESP in August, 2013. The current tariffs needed to be adjusted upwards to allow for higher cost recovery.

To address these high priority issues NRECA made two immediate changes in ESP to: 1) provide additional support to KAPECO and MECO by bringing in additional accounting resources to work with the bookkeepers in each utility on a daily basis to provide more intensive, on-the-job training in general ledger management and financial reporting; and, 2) illustrate the need for tariff increases to each of the boards at MECO and KAPECO, and work with them to design a program to increase revenues as needed to account for the revenue shortfalls that occurred due to the extraordinary fuel price that persist today. This exercise also resulted in a modification of the fuel adjustment formula currently being employed.

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The ESP team presented the results of the financial analysis to the board chairmen and managers of the utilities (MECO-July 12 and KAPECO-July 26). The critical findings of the report were highlighted followed by recommendations put forth to address the two issues of immediate concern – the need to increase revenue and reduce expenses.

MECO developed a financial strength and stability plan that includes the following actions:

1. Increased base rate by 25% (from 1.38 to 1.48 SSP per kWh) effective with August billing
2. All Customer Information System (CIS) training reports to be provided to the managing director including trainees performance
3. Managing director to attend all CIS trainings
4. Managing director to seek for provision of 3 computers for CIS system and be networked
5. Management to survey and assess prospective customers in the area inquiring on what obstacles cause them to remain without electric service with a goal of increasing customer connections by 3% monthly
6. Management to arrange for regular community awareness meetings
7. Management to explore reducing the number of employees at the end of the current contract

KAPECO has developed a financial strength and stability plan that includes the following actions:

1. Increased base rate by 20% (from 1.57 to 1.65 SSP per kWh) effective with August billing
2. Immediate recruitment of managing director - once hired provide with in depth training on utility management and operations
3. Immediate recruitment of accountant and assistant accountant - once hired provide with in depth training on utility financial operations and CIS
4. Train the incoming managing providing a thorough understanding of the CIS

Both boards will continue to evaluate utility operations and finances exploring options to improve the fiscal strength and stability of the organizations along with improving daily operations.

Task I – Technical and Financial Sustainability Support for Kapoeta, Maridi and Yei Electric Utilities

Customer Information System (CIS) and Accounting Workshops/Mentoring Activity

The CIS package used to support YECO, MECO and KAPECO was adapted to meet the specific accounting, billing, and reporting needs of these utilities in recognition of the modest business systems requirements of these three small enterprises. However, even with a simplified software design, the administrative, accounting and commercial staff have and will continue to require ongoing training and orientation in the software system.



In an effort to address the remedial support needed the ESP team led by Janet Kauffman, Deputy Chief of Party-ESP and Tajul Islam, CIS

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Training Specialist prepared and conducted training workshops in Kapoeta on November 15-21; in Yei from November 26-December 7; and finally in Maridi from December 10-20. The workshops varied in length from 7-10 days, depending upon the needs of each utility. Each workshop began with formal classroom sessions on the following topics:

- Correctly setting the parameters for CIS processing
- Data entry and processing
- Introduction to accounting principles and practices
- Transaction analysis

The second half of the workshops was spent in the office observing system operations and activity where day to day work issues could be dealt with during the observation and mentoring sessions.

As part of their mentoring session in Yei a plan was developed for YECO to enter an entire year of transactions to enable the YECO staff to close books in a timely manner. Specific directions were provided to the Manager of Finance and Administration and a follow-up visits were scheduled on a regular basis. Plans were also developed to visit each utility in January to provide year-end accounting assistance.



Attendance for the CIS / Accounting modules (round one) at each utility is noted in the following table:

Utility	Trainees	Male	Female
Kapoeta Electric Co (KAPECO)	4	1	3
Maridi Electric Co. (MECO)	4	4	0
Yei Electric Co-op (YECO)	8	5	3
Totals	16	10	6

The CIS team began rollout of the updated version of CIS with round two of the training module beginning in Maridi April 15. During the visits feedback from the users was incorporated into a few of the updates / revisions. Basic utility accounting was also included as part of the training sessions which were attended four (4) MECO employees.

Following these sessions in Maridi the team moved on to Yei with the focus being on specific accounting issues that YECO has been handling incorrectly, or not handling at all— the accounting of fuel and labor for example. The discussion covered accruals and payment transactions along with related transactions such as labor overhead and the fuel cost adjustment. Participants in the YECO training participants included the Acting Finance and Administration Manager, the Assistant Accountant, the



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Cashiers/Assistant Accountants and the IT/Sales Associate (eight participants). The General Manager, Technical Manager and Commercial Manager also sat in on many of the discussions.

Specific topics of discussion included:

- New consumer complaint register to track the number and type of complaints, action taken and the time taken to resolve the complaints
- Segregation of tasks among the users to improve efficiency and increase the reliability of data
- Sub module providing for bill collection through local banks
- Method to close a period preventing further changes to the records
- Inclusion of a programming “block” to prevent unbalanced journal entries
- Expansion of a payroll spreadsheet to include calculation of the employer’s share of SSI and proportionality allocate it to the same accounts as the charged labor.
- Introduction of a new “pre-bill” report which allows meter readings to be reviewed for “reasonableness” and help with making the decision on whether or not an investigation of the current / past readings needs to be initiated

Given the security concerns in Eastern Equatoria the team did not travel to Kapoeta. They remained in Yei for a few extra days following their CIS presentations to assist YECO in organizing and coding transactions for entry into CIS.

Regular Monitoring and Mentoring Visits to the Utilities – Throughout the year the ESP team visited each utility for various lengths of time to observe the employees’ use of CIS and monitor utility accounting practices and procedures. The mentoring of employees was a critical part of the site visits. A variety of topics were discussed and issues addressed including:

- Month-end closing activities and approaches for when expected data is not available
- Reconciliation of accounting statements and bank accounts
- The chart of accounts revisions and related transactions
- Billing and collections
- File backup
- Generation and review of monthly statements / reports

CIS Updates – The ESP team worked closely with our CIS specialists in Bangladesh and Haiti on developing issues, report adjustments, software updates and the continued upgrading of various modules for the system.

The CIS and utility accounting training program including utility visits and mentoring process progressed at a steady but slow pace. Progress has not kept pace with the training goals as the employees many times lapse back into previous bad habits and mistakes return. We have found that repetition combined with patience is the best medicine and will continue this formula into FY 2014.

Limitations in CIS / Accounting Training

The CIS & Accounting Training at all three utilities is showing limited progress slowed by several issues:

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- The employees do not fully understand basic accounting and much of the training time is spent focusing on basic transaction analysis and journal entry preparation for activities not specifically covered in CIS. Monitoring and mentoring by the ESP team continues to take place in an effort to improve this area of concern.
- The process of CIS training has helped identify specific issues with the software that can be improved to make use of the CIS easier and more effective. Adjustments to the CIS will be made by the CIS team and an update will be implemented during the next visit by the specialist in the near future.
- CIS access is limited to only one computer at each utility. In order to ensure that multiple team members at each utility build CIS skills and understanding, access will need to be expanded to additional computers by sharing access via a network. We will be exploring the possibility of networking the office computers to allow CIS activities to be carried out by more than one person on one computer.
- The staffs at all three utilities continue to struggle to correctly categorize expenditures in the appropriate accounting categories, and to prepare accurate financial reports. It is our observation that staff tries to memorize various entries and transactions without thinking through the process on why certain actions are taken. We'll continue to work through the issues focusing our effort on not completing the transaction for the staff but providing training and support to provide a better understanding of the process. While progress is being made the advances are being made at a snail's pace. The FY 2014 will include revisions to our program to address this concern and improve this effort.

Board Training

The initial board training module along with an update on ESP activities was presented to the board members and senior staff in Maridi and Yei in February. Topics covered in the board training presentation include; board governance, policy development, and board/CEO evaluations. The information was presented at the KAPECO board meeting in March and included an update on technical operations and review of the December 2012 financial statements.



Greg Boudreaux, Board Training and Development Specialist led a board training workshop held in Yei at the Episcopal Church of Sudan (ECS) Conference



Center June 11-13. Eight board members from MECO and YECO along with the three utility managers attended the three day program which focused on Board Governance including: explaining the role and responsibilities of the board; defining the director duties of loyalty, obedience and care; reviewing each organization's foundational documents; discussing the role, responsibilities and powers of the chairman and other officers; defining the board relationship with the utility managers; and a review of key policy areas. (Unfortunately,

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due to the security issues in Eastern Equatoria State, members of the KAPECO Board were unable to attend the training workshop; however, a Board training session was held in Kapoeta to cover these topics.)

ESP team members supported Mr. Boudreaux by presenting information on the critical financial and utility operations information and reports that need to be reviewed by the board on a regular basis. Financial statements such as the balance sheet, income statement and the cash flow statement were highlighted. Key ratios were presented to help the board gauge the utility's financial strength and stability.



Critical utility operations including a review of electric utility basics, generator efficiency, reliability / outages, and line loss were included in the presentations. It was stressed that certain key operational ratios and trends to reviewed and monitored on a regular basis. Safety was also stressed to those board members attending pointing out to them the need for the board to support strong utility maintenance and safety programs to minimize the chance of accidents and threats to system operations.

In late July ESP staff travelled to Kapoeta to present the board training program to KAPECO board members. The topics covered during the program included: the role & responsibilities of the board; director duties of loyalty, obedience & care; focus on foundational documents; the role, responsibilities and powers of the Chair & other officers; the board relationship with the GM/CEO; and, a review of key policy areas.



Unfortunately only three board members (including the chairman) and the acting managing director were in attendance; however, in August a follow-up presentation was made to the members unable to attend the previous sessions and the new board members at KAPECO. Training topics included the instruction and orientation sessions focused on utility operations, board governance and the roles, duties and responsibilities of board members. New board members were also instructed on the importance of hiring a competent managing director and providing the manager with guidance and direction through the development of board policies and yearly performance appraisals.

Management Training Workshop

The initial management training program for ESP was held in Yei on March 18-21 at the Episcopal Church of Sudan (ECS) Conference Center. The 3-½ day workshop was led by Kent Wick, NRECA International Management and Finance Specialist with support provided by ESP team members. Nine employees attended the workshop – 7 men and 2 women. The formal presentations covered the following topics;



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- Management/board Relations
 - The difference between the two leadership roles and how they interact
- Management/employee expectations, communications and performance evaluations
 - What do employees and employers want/expect; how can they communicate expectations; and, how can expectations and performance be judged?
- Financial evaluation of an electric utility
 - What numbers, trends and/or ratios are important; what are internal controls and how they can help to improve operations?
- Leadership – the ability to guide and direct employees
 - What makes a good leader and can these traits be learned?

Each afternoon following lunch the participants joined in some excellent peer-to-peer discussions sessions covering a variety of topics including; improving revenue collection, reducing expenses, key accounts, safety and safety awareness, human resources (employee and utility wants and needs), workplace conflicts, budgeting and working within budget, and increasing kWh sales. Time was taken on Thursday afternoon to develop an employee evaluation form to be used by the participants for future evaluations. The group also discussed training needs and made suggestions on future training topics.



Unfortunately the KAPECO the management staff was unable to attend the session in Yei; however, the majority of the management training workshop material to was presented to the KAPECO staff during a visit to Kapoeta March 25-29. Six staff attended the sessions; 4 male and 2 female.

Lineman Training and Mentoring Activity

Jerry Rodgers, NRECA Lineman Training Specialist, began the lineman training and mentoring program by visiting each utility during the months of November-December presenting formal classroom training supplemented with field training and observation of work practices in the field. The main thrust of these sessions combines safety training with skills development to ensure that linemen and groundmen learn how to work with minimal risk of injury while building skills in all phases of line construction, operation and maintenance procedures. Sessions were conducted in Maridi, November 20-29; in Yei, November 30 - December 8; and in Kapoeta, December 9-20.



The training program at each utility began with an examination of recent electric service installations and line segment construction completed by the utility crews during the past nine months. This training activity focused on diagnosing compliance and non-compliance with best work practices of randomly selected work orders and staking sheets undertaken by line staff including pole top assemblies, pole setting, transformer mounting, transformer and service connections, guying, and other construction, operation and maintenance practices.

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The formal classroom training sessions covered the following topics:

- Program introduction
- Work order and line inspection reporting
- Line patrol and reporting procedures along with pole numbering – why and how
- Basic and three-phase transformer connections
- Tool and material storage and maintenance
- Basics of line staking
- Reorganization of “spec book” (standards and specifications for line construction)
- Millimeter to inch conversions
- Demonstration on the proper use of block and tackle
- Proper use and tying of knots
- Development of single line diagram of three-phase backbone system



Field training, observation and mentoring included:

- Line patrol
- Inspection of secondary service drops
- Tool inspection
- Observing road crossings and discussing what determines a proper road crossing
- Setting an pole “in-line” to allow for a line extension, proper grounding procedures, installation of hardware, loading pole and “tailgate” discussion
- Setting of pole for pole climbing, observation of pole climbing abilities and techniques by the linemen and pole climbing instruction
- Proper use of the shotgun stick.
- Evaluation of line and pole location of a river crossing



- Eradication of bees nesting in and around substation switches
- Pole top rescue
- Wiring a three-phase transformer bank
- Chain saw operation and repair
- Proper use of the volt-amp multi-meter and phase meter

Attendance for the Lineman Training Programs at each utility is noted in the following table:

Utility	Trainees	Male	Female
Kapoeta Electric Co (KAPECO)	8	8	0
Maridi Electric Co. (MECO)	9	8	1
Yei Electric Co-op (YECO)	11	11	0
Totals	28	27	1

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John Padilla, NRECA Lineman Training Specialist led the MECO linemen in an extensive program on three-phase line construction in July which included pole climbing; pole framing, setting and anchor installation; construction of a transformer structure; digger derrick operation and chainsaw operation and safety. This practical, hands-on training is included as part of the observation, monitoring and mentoring provided during the extension of the three-phase line to the Maridi water treatment plant.



Line construction was completed and fully energized following the installation of the transformer and meter.



Bud Stanley, NRECA Power Generation Operations, Maintenance and Metering Specialist worked with the linemen at MECO in August providing training on the installation of a three-phase transformer along with the associated electronic metering and underground service entrance for the Maridi water treatment plant. Also included in the connection of the plant was the installation of a load transfer switch to prevent back feed into the MECO distribution system when the backup generators are operating.



The transformer was energized but remained in an unloaded, test condition until the following morning when the facility was fully energized from the MECO distribution system. The final connection included a voltage test under no load and load conditions. The electronic metering was also checked and found to be operating correctly.

Since the connection to the MECO distribution system included the installation of a load transfer switch the switch was operated as part of the system connection test (isolating the MECO distribution system) and the water treatment plant's backup generators were connected to the plant and checked for proper operation. Under both test conditions the plant's electrical equipment operated normally and the transfer switch operated correctly.



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MECO line staff was exposed to a tremendous amount of information and performed the majority of the line construction work along with the transformer, meter and underground wire installation under the guidance of NRECA specialists John Padilla and Bud Stanley. They MECO linemen participated in the final connection of the facility and the testing of all components to gain a better understanding of the three-phase installation and water treatment plant operation.

Power Generator Training and Mentoring Activity

Bud Stanley, NRECA Power Generation Operations and Maintenance Specialist, presented the power plant operation and maintenance training and mentoring program by visiting each utility during the months of November-December. During each visit Bud presented formal classroom training sessions supplemented with troubleshooting, observation and mentoring. These training sessions focused on skill development to ensure the proper, safe and efficient operation and maintenance of the power system and compound generators. Mr. Stanley visited Kapoeta November 29 - December 5; Yei November 30 - December 8; and Kapoeta December 12-20.



The formal classroom and field training sessions covered the following topics:

- Basic electricity training including Ohms law and how to apply it to the DC circuits in the generator sets which forms the basis for troubleshooting problems
- Troubleshooting of starting circuits, batteries, and generator exciters
- Basic electrical theory and AC circuits as applied to generators, relationship to speed, voltage control, use of potentiometers to regulate speed and trouble shooting
- Review of various reports, manuals, and prints with discussion on how they related to the operation and base line performance of machines and maintenance requirements
- Troubleshooting of compound generator
- Capacitor start squirrel cage motors
- Battery maintenance and how to determine when a battery has sulfated plates and why such a condition is something to be avoided
- Function and operation of substation breakers including an examination of how bypass fuses are applied and how to replace a blown fuse
- Current transformers – applications and dangers
- Starting circuits, batteries, and generator exciters – their use in trouble shooting
- Analyzing a fault that occurred during a rain/wind storm and why the generator breaker did not trip
- Review of a diesel engine's fuel and air requirements to properly operate and carry the loads placed on the generator.

Also as part of the classroom training various reports, guidance documents and operating manuals for the generator's Electronic Module Component Panel – Model 3 (EMCP-3) were

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gathered together with missing items replaced with the documents restored to good condition for future use / reference.

Field training, trouble shooting, observation and mentoring included:

- Installation of the fuel filter/fuel valve in the compound genset
- Running of compound genset for two hours under full load as a test
- Replacement of a spare battery
- Completed the wiring of the station service power to the compound genset so that the battery will be charging from the station service when the genset is not running
- Troubleshoot a low coolant level alarm for the generator
- Taking an inventory of the spare parts – with employees identify each part and pointing out where the part is used on the gensets.
- Reading and selecting the correct function on the EMCP 3 controls
- Observed a voltage unbalance on a generator which was traced to unbalanced loading on the distribution line (no problem with gensets) – What can be done
- Troubleshoot generator for failure to carry load and found an extremely dirty air filter which was causing the problem.
- Examination of a bendix and a discussion on how it engages the flywheel to start generator and troubleshooting of compound diesel genset.
- Use of the multi-meter to troubleshoot the circuit and found a bad potentiometer which they replaced.
- Thorough cleaning of generator units including coolant radiator, fan blades and fuel radiator with instruction provided on the proper way to clean the equipment with a power washer.
- Resetting the clock on the electronic KWH meter to record the proper date and time of the peak loading on the generator
- Examination of the engine sensors – location and function and a review of the electronic controls on the generator units.
- Instructed power plant operators on the correct method of cleaning the electrical/electronic controls of spider webs and dust.



Power Plant Generator Checks - As part of this visit the specialist connected the generator communications units with the diagnostic computers using diagnostic software to evaluate past operation faults and operation performance. The laptop checked the logs of the power plant gensets with the Caterpillar software - CAT ETool checking for any alarms since the units were placed in service. The diagnostic procedure was presented to the plant operators but the sophistication of the technology will require



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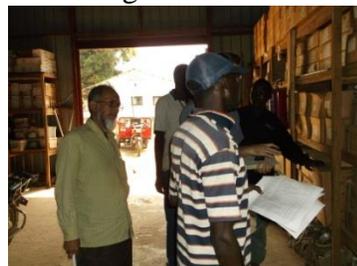
additional (and many years of) training. Most problems were minor and could be corrected on site with supplies available at utilities.

Attendance for the Power Generation O& M Training at each utility is noted in the table below:

Utility	Trainees	Male	Female
Kapoeta Electric Co (KAPECO)	2	2	0
Maridi Electric Co. (MECO)	4	4	0
Yei Electric Co-op (YECO)	7	7	0
Totals	15	15	0

Inventory Management, Physical Count of Material and Procurement Network

Following the initial evaluations of the utilities early in ESP it was found that additional work and analysis need to be undertaken in the management of materials in inventory and the development of a procurement plan for all three utilities. Leading this effort was the team of Nicholas Allen and Shahid Zaman, NRECA Engineering Specialists. They began this task with an evaluation of current inventory management and procurement policies and procedures. The team evaluated the inventory/warehouse control processes as well as conducting a full physical count of existing material. The team also initiated the development of several template documents for potential use at the utilities including;



- An inventory issue and return form
- An inventory stock card ledger
- A template item trading agreement
- A template inventory database
- A simplified instruction sheet covering the usage of the various forms and the process of updating the inventory database.

In preparing to explore opportunities for the exchange of material between the utilities and the joint procurement of material from a supplier network (East Africa) we established values for the inventory items and beginning to research material suppliers.

The inventory and warehouse assessment report which included the various template documents/forms for recording and dispensing inventory, material exchange and joint acquisition was completed. While the initial plan was to make presentations to the board, management and staff in the May / June timeframe of this year we made the decision to postpone the presentation of the information and implementation until early in FY 2014.

As part of our attempt to develop a list of suppliers in East Africa for procurement purposes, an Expression of Interest (EOI) was published in the Juba Citizen, Nairobi's Daily Nation, and Kampala's New Vision newspapers to prequalify material suppliers; ten responses were received with all pertinent information filed for future reference / solicitation.

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Utility Operations Report

The utility operations report provides valuable performance monitoring and measuring indicators established to contribute to the understanding of good business practices.

Key performance indicators for FY 2013 are found in the table below.

Key Performance Indicators October 2012 – September 2013	KAPECO		MECO		YECO	
	3 rd Q	FY 13	3 rd Q	FY 13	3 rd Q	FY 13
Services in Place	450	482	524	586	1,107	1,200
New Connections	32	131	62	131	93	100
Percentage Increase (Decrease)	7.1%	37.3%	11.8%	28.8%	8.4%	8.3%
System Peak Demand (kW)	103	117	161	161	627	576
Generator Efficiency (kWh/Liter)	2.92	2.82	2.96	2.79	3.57	3.28
Percentage Increase (Decrease) in Fuel Efficiency	13.6%	5.6%	10.4%	6.9%	2.9%	18.4%
Average Run Hours Per Day	13	13	16	16	17	17
Outages (Number)	0	4	2	7	2	9
Outage Hours per Consumer	0	6.59*	.080	.462	3.86	7.25**

Key issues and activities at the utilities:

KAPECO

- The young man hired and trained to become the new Managing Director returned to Juba. Apparently the salary offered (and increased during negotiations) was not high enough to retain his services. Stephen Okeny, Commercial Manager was appointed acting managing director.
- For a period of time the generator efficiency for KAPECO was affected by the reduction in kWh sales due to the security situation and the closure of many shops in and around Kapoeta.
- * Experienced a major outage of seven hours when a SPLA truck breaking a pole with the resulting outage lasting seven hours.
- Generator # 2 developed starting problems – performed diagnostics under the guidance of Bud Stanley – ESP generation specialist and replaced batteries correcting problem.
- Negotiating with Zain and MTN to connect cell phone towers
- Completed regularly scheduled maintenance on generators

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MECO

- Completed construction of three-phase distribution line and made final connections to the Maridi water treatment plant.
- Governor of WES, Maridi County Commissioner and UN personnel visited compound 13-Feb.
- Hosted a variety of dignitaries throughout the year including; the Governor of WES, Maridi County Commissioner, UN personnel, the National Minister and Deputy for Telecommunications visited compound February 19
- Completed regularly scheduled maintenance on generators
-

YECO

- Hired new general manager – Malish Lawrence Taban
- Change in accounting personnel—almost complete turnover during the year hampering the ability to maintain accurate accounting/financial information.
- ** Experienced a major outage to change out rotten pole
- Completed full generator overhaul on generator #3 and planning overhaul for generator #2
- Hosted JICA representatives exploring opportunities for electricity sector projects in South Sudan
- A lineman was serious burned after coming in contact with the high voltage electric line. The lineman was transferred to Kampala for initial treatment and has returned to Yei for long-term recovery.
- Completed regularly scheduled maintenance on generators

Daily Technical Assistance and Mentoring

The ESP team members invested significant time and effort to bring practical, technical assistance in each developmental area addressed in the specific workshops, training sessions and field observations. Not only do the various formal sessions place an emphasis on developing specific skillsets but the continuation of the training by observing the daily work routine combined with the mentoring process of providing practical suggestions and guidance leads to improvement in the employees' hands-on, day to day business skills and approach.

A few examples of the daily technical assistance and mentoring provided are:

- Maridi Water Treatment Plant - The coordination and planning support provided by the local ESP team and NRECA International to MECO as they work with the Sustainable Water and Sanitation in Africa (SUWASA) organization in constructing an extension of the three-phase distribution network to the Maridi water treatment plant. The team is working with local staff on all aspects of project development including customer meetings, project planning and design, procurement, financing and decision making.
- KAPECO Service to UN Mission in South Susan (UNMISS) – World Food Program NRECA staff accompanied KAPECO staff in meetings with the Engineer for the

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UNMISS in Torit to discuss the proposed connection of the UNMISS Kapoeta compound to the KAPECO distribution system. We also worked with KAPECO staff to provide information used by UNMISS to compare the cost and benefits of the proposal.

- MECO Distribution System Load Balance - Completed an analysis of the electric load (amperage) on each phase of the distribution system to balance the amperage load on each phase. It was recommended that a change in the phase connection of two 25 kVA transformers be made.
- Board and Employee Evaluations - Developed evaluation forms for the board, managers and employees. The drafts were a key topic of discussion at the management training workshops in Yei and the development of evaluation forms to be used at the utilities.
- Hiring of New General Manager at YECO - Worked with YECO board to review resumes and observed the interviews for the general manager position.
- Environmental Compliance - Developed an action plan along with a checklist that was distributed to the respective utility managers in April / May to fulfill the environmental mitigation & monitoring requirements of USAID projects.
- Evaluation and Interviews for KAPECO Managing Director - Working with KAPECO Board to develop job advertisements for the position of Managing Director and Assistant Accountant, receiving application and sitting in as observers to the interview process.

Task II – Yei, Maridi Hybrid Micro-Hydro Capacity

It is quite significant to note that, while the number of connections at Kapoeta and Maridi continue to increase and approach the number of connections originally thought to allow these utilities to achieve self-sufficiency; the point of financial break-even has still not been reached. Our studies indicate that the major reason behind this failure is that newly connected consumers are using very little energy, and the cost of generated power remains high.

While this task currently remains unfunded the need to explore various opportunities to include renewable energy resources into the electric generation mix increases every day. Initially Task II focused on the evaluation of micro-hydro options available at Yei and Maridi and the development of preliminary plans to construct such projects to supplement the diesel generation. However, NRECA believes that it would be extremely important to evaluate other renewable energy options – in addition to the hydroelectric power options being considered.

NRECA is preparing a proposal which evaluates the current uses of electricity in the agricultural sector and how expanded electricity use will improve the commercial development of agriculture within South Sudan. The evaluation will examine how reducing the cost through the introduction of renewable resources in the electric generation affects growth in the agricultural sector in and around Kapoeta, Maridi and Yei. The study also looks at the savings to be realized by the introduction of such hybrid systems and how such savings contribute to economic development of the area contributing to the long-term sustainability of the utilities.

Once the various options have been identified and evaluated the information will be provided to USAID with strong encouragement to take action as quickly as possible in an effort to provide

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utility customers with access to lower cost energy at the earliest possible date. Providing lower cost energy will have an immediate and lasting impact on self-sufficiency for each utility that enjoys this option.

Task III - Utility Evaluation and Development Support for Yambio

While significant progress had been made to design, procure and install power generation and distribution infrastructure in Yambio, the system has not been placed in commercial operation and the components of the system are falling into disrepair. Task III called for the NRECA team to engage in a comprehensive evaluation of the engineering and construction requirements to energize the generation-distribution system, and evaluate management options to achieve sustainable operation of the utility in collaboration with WES leadership and technical-administrative staff.

While activities to evaluate the options to develop an electric utility in Yambio got off to a slow start the end of the year brought a flurry of activity. During several visits meetings were held with the Minister of Physical Infrastructure and Public Utilities the Honorable Clement Juma Mbugoniwia and concerned officials including the State Director General, Eng. Richard Miza to exchange information on the process to be used in the system analyses. On July 2nd ESP staff met with the Honorable Minister Clement Juma Mbugoniwia and concerned officials to form a team from WES to work with NRECA in August and September to complete the evaluation. It was agreed that the technical evaluation of the generation and distribution plant would begin in August with the institutional evaluation to follow in September.

In August Serge Khalife, NRECA Engineering Specialist traveled to Yambio to complete the technical evaluation. He was followed by Laban Kariuki, NRECA Utility Planning Specialist who traveled to Yambio in September to complete the institutional evaluation. The technical analysis combined with the institutional analysis will serve as the base documents for the government to explore the options of completing the generation / distribution system to provide commercial electric service to the Western Equatoria State capital.



The technical analysis included an in-depth evaluation of the improvements needed to bring the current system (generation and distribution) up to safe and reliable operation standards along with exploring the expansion needs of the electric distribution system

necessary to provide more complete electric service coverage to the community. The final report will include providing full cost estimates to complete the necessary upgrades.

The institutional review examined options available to satisfy the goals of a possible public-private partnership to manage both power generation and commercialization of electric service. The institutional analysis included an evaluation of the State Government as a principal stakeholder in ownership and management of the power system, as well as to chart out a training, mentoring and support program for the resulting utility.



The full report containing both analyses is planned for completion and submittal to USAID in the

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near future.

Meeting with SGI African Holdings Ltd. on Possible Investment in Yambio Project

On Monday, August 19th ESP staff met with Bobby Mickler a representative with SGI African Holdings LTD. They discussed the ESP tasks associated with the technical and institutional evaluations for the Yambio utility plant. SGI is exploring the opportunity to work with USAID and WES to invest in the reclamation of the physical plant and development of a utility to serve the state capital.

Other ESP Support Activities

Reimbursement Payments to Utilities

ESP contains money to support KAPECO and MECO during their early growth years of operation when cost recovery is difficult. The reimbursement is based on non-fuel, cash operating expenses. In order to receive the reimbursement the utilities are required to submit an official request to the NRECA team indicating the time period covered by the request and the amount of the reimbursement. The formal request is accompanied by completed Form 1s for each month along with all supporting financial and accounting records providing detail on all expenses and revenues identified. Following a thorough review of the monthly Form 1s and support documentation a final amount is approved and transferred into the bank accounts of the two utilities. Payments for FY 2013 were as follows:

Utility	Oct-Dec 2012	Jan-March 2013	April-June 2013	July-Sept 2013	FY 13 Program Total
KAPECO	\$40,000	\$17,700	\$0	\$35,549	\$93,249
MECO	\$45,000	\$19,000	\$33,200	\$16,300	113,500
	\$85,000	\$36,700	\$33,200	\$51,849	\$206,749

Participation in USAID Activities

Throughout the year ESP staff participated in a number of USAID hosted activities and or site visits. Many of the activities are included in the following table.

Event	Date	Location
ESP Project Overview and Discussions	October	Juba
Life of Project Environmental Compliance	January	Juba
ESP Program Update to AOR	February	Juba
ESP Program Update to AO, AOR and Alternate AOR	May	Juba
Contract/Agreement Audits & Finance and Procurement Rules	June	Juba
Financial and Procurement Training Workshop	July	Juba
ESP Program Update & Introductions of New USAID Officials	August	Juba
Data Qualitative Analysis Review of ESP M&E Indicators	August	Maridi

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Early Departure of Deputy Chief of Party

Janet Kauffman accepted a one year assignment to perform the duties as Deputy Chief of Party (DCoP) for the Electrification Sustainability Program in South Sudan (ESP) in August, 2012. In early June Janet informed NRECA that her husband, who has a degenerative vision condition, was scheduled to undergo corrective surgery in July followed by several months of recovery. Due to the severity of his condition, it was agreed that Janet should return to the US.

As noted in the original ESP work plan proposal, Janet's tenure as DCoP was for a one year period through August 12, 2013. With Janet's early departure many of her duties were transferred to Swalleh Rajab, currently serving as Senior Commercial Specialist in support of ESP. NRECA also initiated the process to hire a project accountant to continue the mentoring process of utility employees in financial management, accounting and customer information system (CIS) functions. CIS support functions continued to be provided by Nazrul Islam and Tajul Islam NRECA CIS specialists along with Sam West, NRECA financial specialist. And finally, to ensure that the transition in duties and responsibilities went smoothly Janet agreed to work part-time if support of a specific nature if needed. While these changes are necessitated by the unforeseen medical condition of Janet's husband, they did not result in an increase of project cost to USAID. Notification of the project delivery changes were submitted to USAID with approval granted.

Hiring of Project Accountant / Administrative Assistant

To continue the progress made by the ESP team with the three utilities in CIS and utility accounting/commercial operations, NRECA added a project accountant / administrative assistant to the ESP team. Twenty-three (23) applications were received following the publication of the search announcement on June 24. The CVs and support documentation were reviewed and the five most highly qualified candidates were identified. Interviews were held at the Hamza Inn in Juba on August 9th and a job offer was made and accepted. The new accountant / administrative assistant Mule Moses Pagale began his duties on September 15.

The new employee is based in Maridi but initially traveled to Kapoeta to work with ESP staff to become familiar with the CIS and utility accounting. Following the initial training held in Kapoeta the training will shift to Yei and Maridi where the employee will work with the various members of the YECO and MECO accounting / office staffs.

Commercial Customer Survey in Maridi

In August NRECA completed the survey of the Maridi Electric Company (MECO) business customers to determine if and to what extent their activities relate to the agricultural and/or food sectors of the area's economy. Silvia Torres, a Socio-economist led the survey team which ESP staff and the local professionals hired to conduct the field survey supported by MECO staff.

The survey pointed out that the way the local agriculture and food markets work in these small towns may be quite different from what one might imagine. That is, providing reliable electric service encourages entrepreneurs to engage in commercial activities, and the increased economic activity creates a portal through which farmers and homeowners have an increased incentive to produce agricultural and food products to sell to neighbors and travelers that might not otherwise

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be produced. These findings were included in the report “Electrification and Agriculture: Linkages to Food Security in South Sudan”, submitted to USAID in September.

As reported under the Task II section of this report (page 23) NRECA is preparing a proposal to introduce hybrid solar-diesel technology for Maridi and Kapoeta in an effort to reduce the cost of generated power that will directly support the financial sustainability of the utilities, and will also result in lowering power costs to the utility consumers. NRECA contends that the results of the study presented in the report illustrate how these energy systems support food and agricultural markets and provide a direct benefit to producers and marketers in Maridi, thus a reduction in cost and expansion of electric service will provide a profound impact on improving food security

Selection of New General Manager at YECO

The Board of Directors at YECO announced the hiring of Malish Lawrence Taban as the new general manager. Mr. Taban was most recently employed as the field manager for the International Rescue Committee (IRC) Torit office. Prior to his work at IRC he was employed in various capacities for the American Refugee Committee (ARC) including administrative and finance manager.

Various ESP staff members met with Mr. Taban shortly following his appointment. While he was new to the utility business, conversations indicated that he has a good understanding of business concepts and recognizes the need to implement sound business policies and procedures to operate in an efficient and effective manner. We discussed many topics of interest including the need to improve generator efficiency, the need for accurate and timely completion of weekly operating reports and the benefits ESP brings to YECO. He was also provided copies of the presentations made during the recently completed board and management training sessions.

Meeting with USAID FARM Project Chief of Party

On April 8th, ESP staff met with David Hughes, Chief of Party for the USAID sponsored FARM Project in South Sudan. The discussion focused on project activity and the possibility of joint opportunities where both FARM and ESP programs could work together to improve the development of food production, storage and processing leading to improvements in the South Sudan agribusiness industry. As part of this effort NRECA International is developing a survey to collect data on the involvement of current electric utility customers in the agricultural sector.

Meeting with Ministry Officials

Throughout the year NRECA staff visited Samuel Yousel Taban of the Ministry of Electricity and Dams (changed to Ministry of Electricity, Dams, Irrigation and Water Resources) in mid-April to update the Ministry on the ESP and answer any questions he might have regarding program activity. We also discussed activity in the Electric Power Sector within South Sudan including the current status of various projects throughout South Sudan.

Transfer of Utility Plant Assets

At the request of USAID, ESP staff continues to work on finalizing the transfer of utility plant assets from the South Sudan Rural Electrification Project (SSREP) and the Sudan Infrastructure Project (SISP), two projects in which NRECA actively participated.

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SSREP - YECO – We received approval from USAID for the NRECA asset disposition plan under Cooperative Agreement No. 623-A-00-05-00310. The documents completing the transfer were signed in May.

SISP – KAPECO and MECO – We continue to work with representatives of The Louis Berger Group (LBG) to finalize the transfer of assets built under SISP to the Eastern and Western Equatoria State governments with the assets being operated and maintained by KAPECO and MECO under memorandums of understanding (MOUs) between EES / WES and the utilities.

NRECA staff developed an MOU to be incorporated in the transfer of assets from USAID to the utilities under SISP. A draft was submitted to USAID, NRECA staff and LBG for review / comment. The comments and revisions were incorporated into the final draft presented to the State Ministers and utilities in April. The meetings in April included discussions on final agreement for the continued operation and maintenance of the distribution plant by KAPECO and MECO for the electrification of Kapoeta and Maridi.

KAPECO – Current Status of Negotiations – An inspection of the assets by EES officials has been completed and the asset transfer document has been signed. The MOU is going through final legal review. It is expected that the MOU will be signed the week of October 28th follow which the documents will be forwarded to USAID for final approval. The process has been delayed by the many changes in key state offices and within the Ministry.

MECO – Current Status of Negotiations – Following the initial meetings with the Minister of Physical Infrastructure and concerned representatives of the Ministry in April, state and county officials visited the MECO compound to inspect the assets to be transferred. The group toured the compound facility including the power house followed by a trip to the field to view the distribution plant and the new three-phase line extension to the Maridi water treatment plant. The group inspected the facilities and discussed certain aspects of the asset transfer document and MOU to accompany the transfer. Discussions continue.

Local Training Partners

ESP, while providing a full complement of training specialists and materials, recognizes that sustainability of the three utilities will depend in large part on the engagement of local training partners. During FY 13 NRECA began to evaluate the potential of developing local training partners in an effort to work collaboratively with local training institutions to develop and deliver specialized training courses.

In many of the training sessions led by specialists from outside the country we noticed that many of the “technicians” (power plant operators) have a limited knowledge of science and very little understanding in math. We also noticed that the employees in general, while able to participate in a casual conversational English experience difficulties once the conversation turns to more business and technical topics. This realization led ESP staff to explore the establishment of partnerships to supply training in the most basic and fundamental skills of business operation including, basic English, Math, Computer and Bookkeeping. We anticipate this skill development which will help the utilities’ current employees along with providing the foundation for the training of new employees in the future.

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Basic English – During the initial year of ESP training program presentations a concern has come to the forefront – there is a question on the trainees’ full comprehension and understanding of the English language. In an effort to improve the employees’ knowledge and understanding of the English language we met with Patricia Wick of the Chaima Institute, a training center sponsored by the Episcopal Church in Maridi. As a result of these concerns and discussions with Ms. Wick, ESP sponsored an English class in Maridi for the employees of MECO. We anticipate such a course will help employees better comprehend the training being presented by program specialists. An evaluation of the course and the progress made by the participants will help staff determine if such a class is useful and, if so, the discussion will be held on how best to replicate this training in Yei and Kapoeta.

We plan to build on the success of the Maridi model to establish programs in Kapoeta and Yei using local training professionals / organizations and explore expanding the program to include computer training and bookkeeping / accounting.

Electric Generator Operation and Maintenance – We also approached Ezentus, the local Caterpillar dealership in Juba regarding the possibility of establishing joint training program for generator operation and maintenance. One of biggest struggles we encounter when training plant operators on the operation and maintenance of the CAT units is their lack of understanding of English along with their minimal background in math and science. The initial thought is to work with Ezentus to develop an operations and maintenance training program that plant operators would attend on a regular basis. We believe Ezentus employees have an understanding of the technical issues and in most cases will be able to disseminate the information to the South Sudanese employees better than specialists from the United States. ESP Specialists can support the effort by working with Caterpillar to help review training course material and possibly in training some of the Ezentus trainers. ESP would support the attendance of the local staff at these training programs by paying the expenses and/or host a visit from a training specialist for a week to observe operator procedures and perform diagnostics on the generators. Any major work past the normal startup, day to day operations, initial diagnostics and regular maintenance (oil, filter changes etc.) would be contracted to Ezentus.

Year in Review - Key Issues and Challenges

Reorganization of South Sudan’s Government

On July 23, South Sudan’s President Salva Kiir Mayardit disbanded his cabinet including the Vice President. The reorganization plan, with activities extending into August, included reducing the number of Ministries and appointing more qualified ministers and a new vice president. The Ministry of Electricity and Dams was merged with Irrigation and Water Resources to form the new Ministry of Electricity, Dams, Irrigation and Water Resources under the leadership of the recently appointed Ms. Jemma Nunu Kumba (former Minister of Housing and Physical Planning Ministry). Ms. Kumba previously served as Governor of Western Equatoria State though July 2011 and is familiar with NRECA as she was in office during the development of the Maridi Electric Company. However, as new Ministers and support staff take office the need to open the lines of communications and share information is critical.

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Security Issues in Eastern and North Eastern South Sudan

During the year there were a few incidents in Eastern Equatoria and Jonglei States that resulted in security concerns regarding the safety of ESP traveling in the region. There were reports of gunfire in Kapoeta and several deaths along the Juba-Torit-Kapoeta road. While heightened security remained in effect through the early weeks in May the end of the month brought calmness to the area. Tensions diminished to the point where ESP staff was able to return to Kapoeta to continue to manage ESP duties.

Following the Minister of Interior issuance of an order to remove all firearms from private security firms we were notified by Veterans Security Services (VSS) that they are removing the guns from all security officers as of October 21st. NRECA and Kapoeta Electric Company (KAPECO) employ VSS to provide protection for the compound and residence in Kapoeta. This decision not only affects the protection afforded facilities and employees at specific locations but may also limit travel to and from various Eastern Equatoria State (EES) locations as armed guards were hired to provide protection for transport along the many insecure routes of travel. We will explore all options available to ensure that security is maintained for employees and facilities as well minimizing the effect on the services provided to KAPECO under ESP.

Logistics

Kapoeta, Maridi, Yei and Yambio are not closely located and travel between the towns is very difficult. The difficulty in travel (time and reliability) poses a significant geographic challenge for the implementation of the project. Travel by road, while the most reliable, can take many hours as the majority of roads are dirt requiring slow, cautious driving and many roads become impassable during the rainy season. Commercial air transportation is nonexistent and while social service agencies provide air transport to a few of the locations the airports are limited and the flight schedules vary from day to day including cancelation of flights during poor flying conditions (including takeoff and landing from dirt runways).



In an attempt to address this challenge the NRECA established a base of operations in Maridi at the MECO compound where both the Chief of Party (COP) and Deputy Chief of Party (DCOP) reside and provide management oversight. In addition, a senior commercial specialist assigned



to reside and work in Kapoeta where he provides management oversight to KAPECO. The COP and DCOP travel to Kapoeta periodically to provide management, accounting and CIS specific training. The COP, DCOP and senior management specialist have also begun to provide support to YECO. The ESP team travels as a group when possible by either vehicle or air transport. The original vehicle experienced a high failure rate which forced the team to purchase a new project vehicle which was delivered in

June. The vehicle purchase was included in the original program budget and all necessary approvals were obtained from USAID.

Initial plans called for ESP to hold board training sessions and peer-to-peer workshops at central locations, and while this plan looked good on paper discussions with the utility directors led the

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ESP team to conclude that such a plan may not be possible for many board members at all three utilities. The time required for travel may take several days and when added to the training would require board members to be away for more than one week at a time which is not possible for directors who are businessmen and community leaders. While joint board training sessions were held during the first year of ESP for the MECO and YECO boards the training session for KAPECO board members were held in Kapoeta. Evaluation of plans to offer employee training on a central basis will continue with various options being considered. To the extent centralized training activities can be utilized to allow the training of employees at all three utilities, the ESP training team will encourage such an option. The training sites for all groups will be dependent upon the availability of training facilities, as well as the cost to the program and the convenience and benefit for trainees. For example the linemen and power generation training is being provided by short-term specialists and volunteers on site, traveling to each utility.

Strained Relations Between Yei County Commissioner and YECO Officials

During the year there were several confrontations between county officials and YECO board members and staff. Most cases stem for the fact that the county commissioner refuses to support the utility by paying the county electric bills. Unfortunately the only recourse YECO has for accounts delinquent in payment is to disconnect the account. If and when county offices are disconnected, county officials detain cooperative employees and apply considerable amount of political pressure to get the accounts reconnected (without payment). Unfortunately “politics” transformed a normal electric utility action into a confrontation which generated anti-YECO sentiment leading to questions on the cooperative business model. In fact following one of these episodes of disconnection the ESP CoP was detained by the National Security office under the instructions of the county commissioner.

Unfortunately the contentious situation existing between the county and the cooperative continues. This situation has been brewing for many months as YECO representatives have held meetings with the County Commissioner and other county officials concerning the unpaid accounts. YECO has not received payment on many of these accounts going back 12-24 months which is unsustainable. The government officials believe that the utility (paying customers) should support all public service facilities – government offices, hospital, street lights, etc.

While discussions between the parties continue changes in the Yei government may provide an opening to improve relations. The governor of Central Equatoria State (CES) designated Yei as a town and appointed Oba Cecilia Tito to the newly created position of mayor. Ms. Tito is the former CES Minister for Cabinet Affairs and Member of Parliament. It is hoped that by building a relationship with the mayor and this newly created office within Yei that tensions can be reduced between YECO and the county commissioner and an agreement can be reached to address the past due amounts owed by the county to the cooperative.

Barriers to Increase Service Connections

The lifeblood of any business is a positive revenue stream created by a vibrant and growing customer base. Unfortunately, increasing service connections at all three utilities has been and continues to be limited by a variety of different factors. As part of the ESP project, the team is evaluating how to overcome some barriers to new connections, given that the financial health of each of the utilities is dependent upon growth of electricity sales. The ESP team is also

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reviewing means of encouraging more sales per consumer given that more unit sales will concurrently contribute directly to financial viability. The team is also exploring options on how to reduce the cost of wiring homes and businesses in an attempt to reduce the initial installation costs and encouraging more customer connections.

Shortage of Materials Restricts the Three Utilities in Connecting New Customers.

When initially constructed the three utilities were provided with all of the construction materials to connect a base of customers thought to be a minimum for financial sustainability. Unfortunately the expansion of an electric system does not always go as planned. Many times the customers within the confines for the physical plant fail to connect for one reason or another and as the towns expand the larger commercial customers and more prosperous residential customers locate outside the original system footprint.

YECO has completely depleted much of their construction material but has been able to purchase poles, meters and meter bases through regional suppliers but at very high costs. KAPECO and MECO have nearly depleted their full allotment of construction material and are severely limited by the remaining materials to extend services to new customers. Such limitations are very difficult for startup utilities to address on their own and additional funding from the donor community is an option that NRECA recommends.

Networking of Computers

During the year the ESP team took the initial steps to evaluate the computer hardware systems at each utility. Unfortunately the current hardware limits use of the computer system to only one operator. The initial review examined the benefits of networking the computers to improve access, time management and employee efficiency. As part of this process an attempt was made to identify possible computer technology partners for future training and business operations opportunities. An evaluation of the MECO facility was completed with analysis of the KAPECO and YECO facilities to follow in FY 2014.

Missing Funds at KAPECO

ESP staff completed a review of KAPECO financial records and CIS Form 1s for the period from March to July 2013. Examined were the procedures in place to handle cash; banking; revenue and disbursements; fuel offloading and payments; employee loans and payroll advances and the actual practices employed. During the evaluation a cash shortage of approximately 19,000 SSP was found as compared to the CIS ledgers and support documentation. It was found that internal financial and cash control procedures that were initially put in place by the NRECA International team at the time of project implementation (Sudan Infrastructure Services Project - Market Town Electrification) and confirmed by ESP program training had been violated. A full report of the findings was submitted to the board chairman and acting managing director. Following the review by KAPECO officials the decision was made to remove the accountant and bookkeeper from their positions for their failure to follow cash management policies and procedures which directly led to the cash discrepancies/loss.

As part of this evaluation and follow-up action taken by the board and management all requests made by KAPECO for the reimbursement of non-fuel operating expenses were placed on hold until new staff is hired, trained and a financial plan developed.

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KAPECO and MECO Employee Contract and Wage Issue

At the end of February the contracts of all employees at KAPECO and MECO expired. The expiration apparently caught the management and board at both utilities by surprise but the employee groups at both utilities quickly recognized the expiration and expressed concern.

MECO – ESP staff met with the MECO employees to address their questions and concerns in regard to the expiration and possible wage increases for the upcoming year. Management was provided a template for employee evaluations and began the process of reviewing employees and developing new contracts / contract extensions. All employees continued to report for duty and there was no work slowdown / stoppage.

Following an evaluation of current financial status and the scheduled reduction in ESP reimbursement payments, the board and management of MECO decided to maintain the current staffing levels with no salary adjustment for 2013. All employees signed employment agreements and will continue the performance evaluation program in 2013.

KAPECO - In Kapoeta three KAPECO linemen elected to resign in protest and the remaining three elected to remain home and not report to work. ESP staff sent a letter to the three remaining linemen encouraging their return to duty which they did. During this turmoil the management and office staff maintained the workflow of the utility including meter reading along with the printing and delivery of March bills. ESP staff then met with the KAPECO board and employees the last week in March to discuss the situation and participate in negotiations on the signing of new contracts and wage increases.

Following an evaluation of current financial status and the scheduled reduction in ESP reimbursement payments, the board and management of KAPECO decided to not replace the four employees who resigned but to continue operations with twelve employees. The reduction in staff (four open slots – three line employees and the customer service representative who had resigned earlier as part of a family dispute) allowed an increase in employee wages yet total payroll was reduced. All remaining employees signed employment agreements and will begin a performance evaluation program in 2013.

Major Events – Upcoming Activity in Year Two

- Re-evaluation of the three utilities' operations and financial position
- Continued formal training programs along with daily oversight and monitoring
- Policy and budget development at each utility
- Completion of Yambio electric utility evaluation and consideration of options to advance the project
- Presentation of renewable energy proposals to USAID for consideration

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Project Team

The NRECA project team assigned to support ESP in FY 2013 included the following team members, by position:

Person	ESP Duties	Tenure
Robert O. Ellinger	Chief of Party	Full Time
Janet Kauffman	Deputy Chief of Party	Full Time
Swalleh Rajab	Senior Commercial Utility Advisor	Full Time
James VanCoevering	Electrical Engineer	Part Time
Md. Tajul Islam	Customer Information System (CIS) Specialist	Contracted-Part Time
Jerry Rodgers John Padilla	Lineman Training Specialist	Contracted-Part Time
Eldon Stanley	Power Generation Specialist	Contracted-Part Time
Gregory Boudreaux	Board Development Specialist	Contracted Part Time
Kent Wick	Utility Finance Specialist	Contracted Part Time
Laban Kariuki	Utility Planning Specialist	Contracted Part Time

Additional support is being provided by the NRECA International Foundation to organize volunteer services of U.S. line workers from NRECA member cooperatives in the United States. NRECA International Foundation contributions are being managed by the Foundation Program Manager and Foundation Program Assistant.

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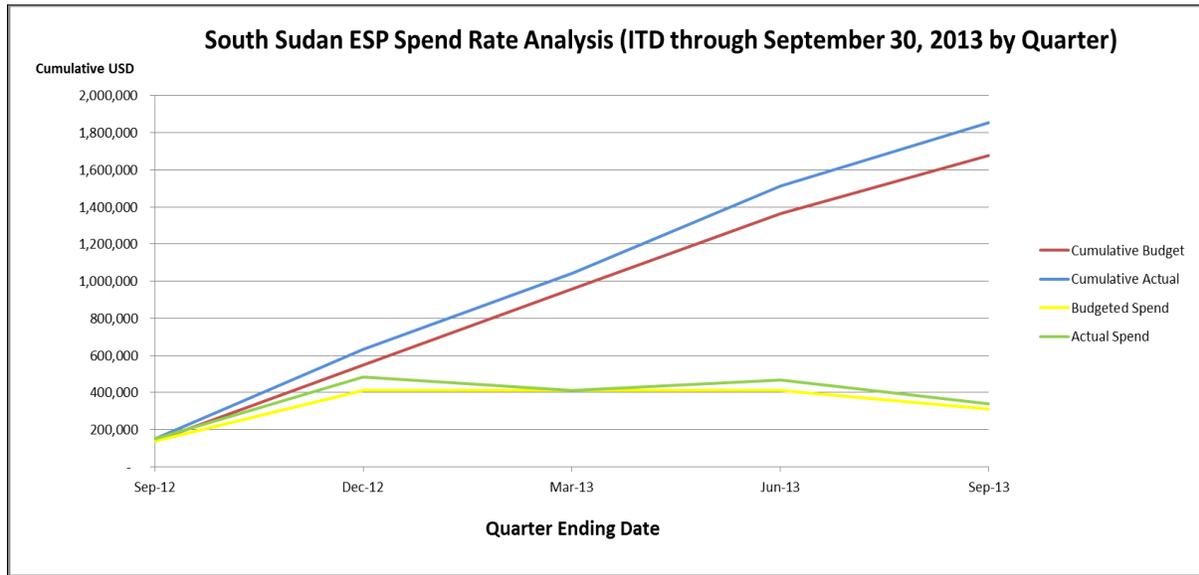
Financial

Financial Status (as of end of reporting period - 06-30-2013)	
a. Project Start Date:	8/08/2012
b. Project Completion Date:	8/07/2015
c. Estimated Life of Activity (months):	36
d. Expired Life of Activity (months):	14
e. Total Estimated Cost:	3,870,000
f. Unilateral Obligation	2,194,000
g. Bilateral Sub-obligation	0
h. Total Obligation:	2,194,000
i. Mortgage (e-h):	1,676,000
j. Expenditures:	1,854,384
k. Pipeline as of end of reporting period (h-j):	339,616
l. Historical Monthly Burn Rate (j/d):	132,456
m. Average Monthly Burn Rate (Last Quarter):	113,715
n. Length of Pipeline in Months (k/m):	1.3
o. Cumulative Expenditures as % of Obligations:	84.52%

Spend Rate Compared to Budget (FY 2013)								
Month	Actual	Budget	Month	Actual	Budget	Month	Actual	Budget
August	51,770	50,000	January	142,991	136,647	June	137,467	136,641
September	98,446	86,641	February	79,987	98,882	July	173,031	104,315
October	178,520	136,641	March	188,326	174,412	August	115,086	104,315
November	169,990	136,641	April	172,024	136,641	September	53,027	104,315
December	134,090	136,641	May	159,629	136,641	Total	1,854,384	1,679,372

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Spend Rate Analysis Graph



Breakdown in Project Costs by Specific Element-FY 2013	
Personnel	\$411,237
Fringe Benefits	\$211,200
Travel	\$133,583
Equipment	\$79,674
Supplies	\$4,216
Contractual	\$179,730
Other	\$129,833
Non-Fuel operating Costs	\$206,749
Indirect Charges	\$498,162
Total	\$1,854,384

With the lapse of 6-7 months between projects a concerted effort was made to increase training and mentoring efforts by NRECA personnel and specialists for each utility during the first year of ESP. Following a spike in spending during the early months of the program the spending rate trended downward throughout the year as training activity was reduced to a more normal rate of delivery. Also, the reimbursement of non-fuel operating expenses was over budget by \$20,000.

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Process Indicators

The table below shows the process indicators that will be used to track progress in the program as compared to initial benchmarks for all activities and tasks. The process indicators for the ESP program are drawn from the program work plan, in which completion milestones have been set for each Task within the three Activities of the program. More details on each Activity and Task are available in the ESP program work plan.

Work plan No.	Activities and Tasks	Milestones	Completion (Planned)	Completion (Actual)
1.0	Yei, Maridi, Kapoeta Technical & Financial Sustainability Support			
1.1	Benchmark diagnostics	Diagnostics completed.	31-Oct-2012	26-Oct-2013
1.2	Board training courses	Board members complete training courses.	18-Jan-2013	Feb-2013
1.3	Board peer-to-peer sessions	Board members participate in peer-to-peer sessions.	23-Jan-2013	13-June-2013
1.4	Leadership Training	Utility managers and key staff complete training courses.	22-Mar-2012	21-Mar-2013
1.5	GM Training	Utility managers and key staff complete training courses.	29-Mar-2013	21-Mar-2013
1.6	Annual GM retreat	Utility managers participate in peer-to-peer sessions.	03-April-2013	FY 2014
1.7	Human resource management training	Utility managers and key staff complete training courses.	24-May-2013	21-Mar-2013
1.8	Accounting and Financial Control Training	Utility financial and commercial staffs complete training courses.	28-June-2013	FY 2014
1.9	Meter reading and data management training	Utility financial and commercial staffs complete training courses.	8-Mar-2013	FY 2014
1.10	Commercial management training	Utility financial and commercial staffs complete training courses.	30-Nov-2013	FY 2014
1.11	Line worker safety training	Line workers complete training courses.	12-July-2013	21-June-2013
1.12	Power Generation Training	Power plant O&M training for plant operators and key staff	21-Dec-2012	20-Dec-2012
2.0	Yei, Maridi Hybrid Micro-Hydro Capacity			
2.1	Hydrology data and community coordination	Review completed.	TBD	TBD
2.2	Civil engineering design	Design work completed	TBD	TBD
2.3	Generation and substation design	Design work completed	TBD	TBD
2.4	Power line interconnection design	Design work completed	TBD	TBD
2.5	Cost estimates	RFQ completed	TBD	TBD
2.6	Financial model	Modelling completed	TBD	TBD
2.7	Report delivered	Design report delivered.	TBD	TBD
3.0	WES & Yambio Electric Utility Assistance			
3.1	Planning workshop with WES Government	WES participates in workshop.	13-Mar-2013	FY 2014
3.2	Diagnostic fieldwork, initial recommendations	Fieldwork completed, initial recommendations delivered.	3-April-2013	FY 2014
3.3	Diagnostic report prepared	Diagnostic report prepared.	07-May-2013	30-Sept-2013
3.4	Diagnostic report delivered	Diagnostic report delivered.	08-May-2013	FY 2014

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Work plan No.	Activities and Tasks	Milestones	Completion (Planned)	Completion (Actual)
3.5	Implementation of Follow-on Training Activity	Follow-on training activity implemented (TBD)	TBD	Delayed
4.0	Program Management, Monitoring, Evaluation and Reporting			
4.1	ESP team mobilization	Consultants notified, PSA signed, and Team mobilized to SS	28-Aug-2012	10-Sept-2012
4.2	Work plan and MEP submitted	Annual work plan and MEP submitted to USAID	5-Sept-2012	05-Sept-2012
4.3	Work plan and MEP revised	Revised work plan and MEP delivered.	28-Sept-2012	17-Oct-2012
4.4	Quarterly Progress Reports	Quarterly progress reports delivered within 30 days of end of quarter.	Jan, April and July 2013	31-Jan-2013 30-April-2013 31-July-2013 31-Dec-2102
4.5	Quarterly Financial Reports	Quarterly financial reports delivered within 45 days of end of quarter.	Feb, May and August 2013	30-Jan-2013 29-July-2013
4.6	Year 2 - Work plan and MEP submitted	Year 2 - Work plan and MEP submitted to USAID	30-Aug-2013	30-Aug-2013

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Output Indicators

Indicator No.	Indicator Name	Indicator Definition, Description, Data Source, and Discussion	Baseline (2012)	2013		Program Actuals
				T	A	
Output 1.0	Board training.	<p>Definition: Number of people receiving USG supported training in roles and responsibilities of electric utility board members.</p> <p style="text-align: right;">KAPECO</p> <p style="text-align: right;">MECO</p> <p style="text-align: right;">YECO</p> <p>Description: Total number of participants in electric utility board training sessions, disaggregated by gender and utility.</p> <p>Data Source: NRECA project reports.</p> <p>Discussion: This is an ESP indicator that closely resembles the USAID standard indicator for management training (see Output 2.0 indicator below). While this indicator is disaggregated by gender, the target is not disaggregated because the program has no influence over the gender of board members selected or elected in the three communities.</p>	0	M-F	M-F	M-F
				5-1	1-0	1-0
				6-1	6-1	6-1
				6-1	6-0	<u>6-0</u>
						13-1
Output 2.0	Management training.	<p>Definition: Number of people receiving USG supported training in energy related business management systems.</p> <p style="text-align: right;">KAPECO</p> <p style="text-align: right;">MECO</p> <p style="text-align: right;">YECO</p> <p>Description: Total number of participants in utility management basic training, and administrative training, disaggregated by gender.</p> <p>Data Source: NRECA project reports.</p> <p>Discussion: This is a USAID standard indicator. While this indicator and reporting is disaggregated by gender, the target is not disaggregated because the program has little influence over selection of utility personnel in the three utilities, and therefore should not set a target as to their gender. Note that the management training and the administrative and financial training envisioned in the program have been combined into this one indicator.</p>	0	M-F	M-F	M-F
				3-3	4-2	4-2
				5-0	4-0	4-0
				5-1	3-2	<u>3-2</u>
						11-4

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Indicator No.	Indicator Name	Indicator Definition, Description, Data Source, and Discussion	Baseline (2012)	2013 T - A		Program Actuals
Output 3.0	Electric lineworker training.	<p>Definition: Number of people receiving USG supported training in electric line and power plant generation work.</p> <p style="text-align: right;">KAPECO MECO YECO</p> <p>Description: Total number of participants in lineworker and power plant generation training, disaggregated by gender.</p> <p>Data Source: NRECA project reports.</p> <p>Discussion: This is an ESP indicator that closely resembles the USAID standard indicator for management training (see Output 2.0 indicator above). While this indicator and reporting is disaggregated by gender, the target is not disaggregated because the program has little influence over selection of utility personnel in the three utilities, and therefore should not set a target as to their gender.</p>	0 0 0 0	M-F 10-1 10-1 14-0	M-F 10-0 10-1 17-0	M-F 10-0 10-1 <u>17-0</u> 37-1

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Outcome Indicators

Indicator No.	Indicator Name	Indicator Definition, Description, Data Source, and Discussion	Baseline (2012)	2013 T - A		Program Actual FY 2013
Outcome 1.0	Improved electric service.	<p>Definition: Number of beneficiaries receiving improved infrastructure services due to USG assistance. (Outcome Indicator is current through Quarterly Report period)</p> <p style="text-align: right;">KAPECO MECO YECO Yambio</p> <p>Description: Total number of customers connected to the three primary beneficiary utilities (MECO, KAPECO and YECO), and to a potential new rural utility in Yambio, multiplied by four. This multiplier is used, rather than a higher number of average household size in South Sudan utilized in other analyses, because some of the electric service customers will be small commercial establishments rather than households. No attempt is made to count beneficiaries such as users of public lighting, beneficiaries of public institutions and NGOs, etc. The indicator therefore will provide a conservative estimate of beneficiaries of improved utility management and operations.</p> <p>Baseline and targets determined following utility diagnostics (Nov-2012)</p> <p>Data Source: NRECA project reports and utility records.</p> <p>Discussion: This is a USAID standard indicator. In the ESP, this indicator is not disaggregated by gender because it will not be directly measured; i.e. the number of people with electric service will not be directly counted in each customer (household, commercial establishment, public institutions, etc.); therefore any gender disaggregation would be an estimate only.</p>	7,400	300		1,364
			1,350	90	328	328
			1,550	100	636	636
			4,400	110	400	400
			0	0	0	0
Indicator No.	Indicator Name	Indicator Definition, Description, Data Source, and Discussion	Baseline (2012)	2013 T - A		Program Actual FY '13
Outcome 2.0	Utility cost recovery.	<p>Definition: Cost recovery index (Indicators No. 2-4 are based on June 2013 figures-3 month lag - and taken from utility submitted reports.)</p> <p style="text-align: right;">KAPECO MECO YECO</p> <p>Description: This standard index will measure the commercial cycle efficacy of each utility (MECO, KAPECO and YECO) as the product of collection rates and losses for each utility. A utility with 95% collection rates and 10% losses would have a cost recovery index of 0.95 * 0.90 or 0.855.</p> <p>Baseline and targets to be set following utility diagnostics (Nov- 2012)</p> <p>Data Source: NRECA project reports and utility records.</p> <p>Discussion: This is not a USAID standard indicator. Disaggregation by utility</p>	85%	86.5	92.7	92.7%
			75%	77%	88.1	88.1%
			66%	72%	86.0	86.0%

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Indicator No.	Indicator Name	Indicator Definition, Description, Data Source, and Discussion	Baseline (2012)	2013 T - A		Program Actual FY 2013
Outcome 3.0	Utility expenditure management.	<p>Definition: O&M expenses per kWh sold, normalized for fuel costs. (Indicators No. 2-4 are based on June 2013 figures-3 month lag - and taken from utility submitted reports.)</p> <p style="text-align: right;">KAPECO MECO YECO</p> <p>Description: The ratio of operation and maintenance expenses per period to kilowatt hours sold in the same period. This ratio will be normalized for variation in fuel costs to ensure that the indicator tracks utility management behavior and not variations in the fuel markets.</p> <p>Baseline and targets to be set following utility diagnostics.</p> <p>Data Source: NRECA project reports and utility records.</p> <p>Discussion: This is not a USAID standard indicator. Disaggregation by utility.</p>	2.1 SSP 1.9 SSP 2.5 SSP	2.05 1.85 2.4	1.58 3.26 0.33	1.58 3.26 0.33
Outcome 4.0	Utility operating margins.	<p>Definition: Operating margins per kWh generated. (Indicators No. 2-4 are based on June 2013 figures-3 month lag – and taken from utility submitted reports.)</p> <p style="text-align: right;">KAPECO MECO YECO</p> <p>Description: The operating margins for each of the three utilities (MECO, KAPECO and YECO) will be tracked and reported. It should be noted that this indicator is <u>not</u> a proxy measure of effectiveness of the ESP program, since fuel costs and other variables in the economic context of each service territory will influence this metric, but it will still be a useful data set for USAID in considering the implications of its investments in utility start-up in South Sudan.</p> <p>Baseline and targets to be set following utility diagnostics.</p> <p>Data Source: NRECA project reports and utility records.</p> <p>Discussion: This is not a USAID standard indicator. Disaggregation by utility.</p>	-1.1 SSP -1.3 SSP -1.5 SSP	-.88 -1.04 -1.2	-.65 -2.5 -.09	-.65 -2.50 -.09

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Indicator No.	Indicator Name	Indicator Definition, Description, Data Source, and Discussion	Baseline (2012)	2013 T - A		Program Actual FY 2013
Outcome 5.0	Mgmt. Staff Turnover Percentage	<p>Definition: Management Staff Turnover Percentage (Outcome Indicator is current through Quarterly Report period)</p> <p style="text-align: right;">KAPECO MECO YECO</p> <p>Description: A high turnover of key management staff may be an indicator of internal strife and disruption within an organization. While there is little information on utility standards in this area comparisons can be made from project start (possibly a year or two prior) to end dates.</p> <p>Baseline and targets to be set following utility diagnostics. Data Source: NRECA project reports and utility records. Discussion: This is not a USAID standard indicator. Disaggregation by utility.</p>	24% 0 % 100%	12% 0% 50%	24% 0% 6%	24% 0% 6%

Impact Indicators

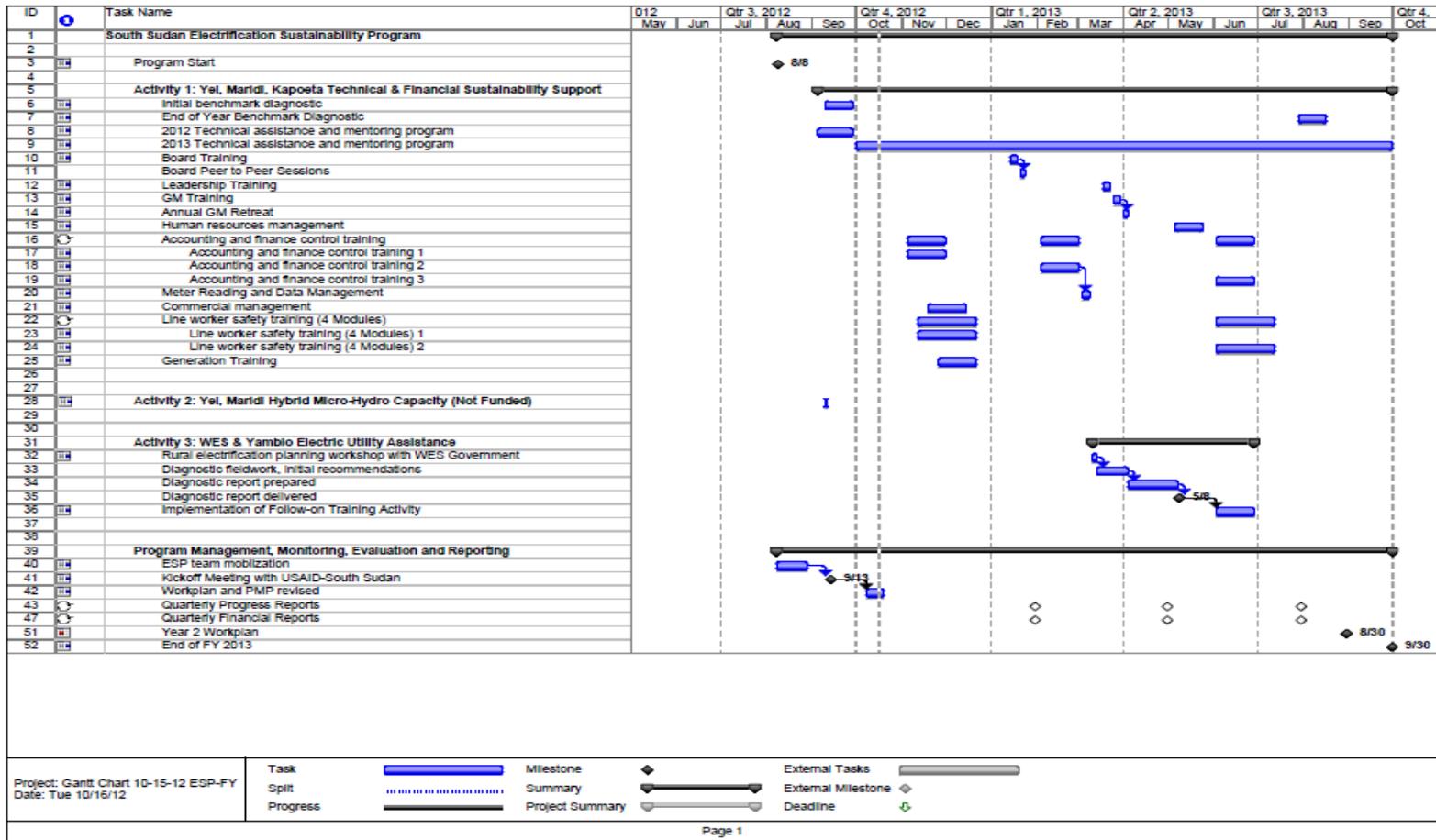
The ESP program will be focused on improving utility management and operations, and therefore will not track high-level impact indicators. However, while there is no direct correlation with project training activities to the indicator, an attempt will be made to measure the number of new businesses or expanded businesses connecting to the distribution grid during the project; possibly as a percentage of businesses receiving electric service from the distribution grid.

Indicator No.	Indicator Name	Indicator Definition, Description, Data Source, and Discussion	Baseline (2012)	2013 T - A		Program Actual Fy'13
Impact 1.0	Number of new / expanded business connections.	<p>Definition: Number of new or expanded business connections (Impact Indicator is current through Quarterly Report period)</p> <p style="text-align: right;">KAPECO MECO YECO Yambio</p> <p>Description: While there is no direct correlation between the project training and mentoring activities and the number of new businesses or expanding businesses receiving electric service, an attempt will be made to measure the number of new or expanded businesses connecting to the distribution grid during the project. Baseline and targets to be set following utility diagnostics. Data Source: NRECA project reports and utility records. Discussion: This is not a USAID standard indicator. Disaggregation by utility.</p>	238 237 740 0	16 16 19	89 66 53	208 89 66 53

Electrification Sustainability Program In South Sudan (ESP)

Year-End Report - FY 2013

ESP Project Gantt Chart



Electrification Sustainability Program In South Sudan (ESP) Year-End Report - FY 2013

Success Story – Kapoeta Electric Company



The following pictures are of the first, electric corn / grain mill in Kapoeta South County. This three-phase account is owned by James K. Gachig a local business man from Kenya. He currently uses both fuel and electric powered units and the KAPECO staff is planning to work with the customer to measure the efficiency of each unit and provide this information to the business in the community to emphasize the efficient and economical use of electricity.

Owner James K. Gachig loads corn into his new electrical grain mill. According to KAPECO staff Mr. Gachig is one of the happiest business customers we serve. He always comes to the office to pay his bill with a smile on his face!!

