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IMPACT ASSESSMENT REPORT

LIBERIA ENERGY ASSISTANCE PROGRAM (LEAP)

Urban Community Development Pilot Project
Wroto Town Community, Sinkor
Monrovia, Liberia



FEBRUARY 2009

This report is made possible by the support of the American People through the United States Agency for International Development (USAID). It was prepared by the Center for Sustainable Energy Technology (CSET) for International Resources Group (IRG).

COVER PHOTO: THEN LEC CHAIRMAN DUNSTAN MCCAULEY AND THE IRG TEAM AT A COMMUNITY MEETING FOR THE URBAN PILOT PROJECTS IN MONROVIA.

IMPACT ASSESSMENT REPORT

LIBERIA ENERGY ASSISTANCE PROGRAM (LEAP)

Urban Community Development Pilot Project
Wroto Town Community, Sinkor
Monrovia, Liberia

FEBRUARY 2009

The contents of this report are the sole responsibility of the author(s) and do not necessarily reflect the views of USAID or the United States Government.

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Augustus V. Goanue and M. Hady Sherif,
Center for Sustainable Energy Technology

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ACRONYMS

CSET	Center for Sustainable Energy Technology
EPP	Emergency Power Program
GOL	Government of Liberia
GPRS	General Packet Radio Service
GSM	Global System for Mobile communications
ICTs	Information & Communication Technologies
IRG	International Resources Group
IPP	Independent power project
IT	Information Technology
kWh	Kilowatt-hour
LEAP	Liberia Energy Assistance Program
LEC	Liberia Electricity Corporation
MBC	Metering, Billing and Collection
MLME	Ministry of Lands, Mines & Energy
MOU	Memorandum of Understanding
MPOS	Mobile Points of Sale
NGOs	Non-Governmental Organizations
USAID	United States Agency for International Development

EXECUTIVE SUMMARY

The prolonged civil war in Liberia resulted in the total destruction of the electricity infrastructure of the nation. The United States Agency for International Development (USAID) and other key donors, through their joint Emergency Power Program (EPP), have made it possible for the Liberia Electricity Corporation (LEC) to restore grid-based electricity to commercial centers, key public facilities, and residential areas.

The Liberia Energy Assistance Program (LEAP) is a follow-on and complementary program to the EPP. Whereas EPP focused on short-term delivery of electricity to Monrovia, LEAP is focused on the long-term sustainable delivery of energy services to the whole country. The Urban Pilot component of LEAP is aimed at providing affordable electricity to low-income urban communities in Monrovia through the use of prepayment meters.

This report assesses the impact of the prepayment meters on the Wroto Town community in Sinkor, Monrovia. Findings from the assessment are based on feedback from the community, customers, vendor, and the utility, and confirm findings from the preliminary impact assessment that was conducted in September 2008.

Results from the pilot project are encouraging and demonstrate that prepayment metering is the way forward for LEC, and the strategy through which the utility can improve its revenue and creditworthiness, which is essential for bankable power purchase agreements needed for system expansion. Furthermore, the use of non-utility vending is an effective privatization of the electricity retail business, which brings the power sector in Liberia in line with international best practice. The best financial model for the prepayment system is the identification and use of a creditworthy and community-based vendor for the bulk purchase of electricity from the utility and retail to customers.

On average, prepayment customers appear to manage their purchases and power consumption better than their counterparts on conventional meters. Benefits of street lights for the community in general include: improved security; post-dusk businesses/sales; increased business hours and income (street vendors sell up to 10pm daily); and reduced theft; Furthermore, students without electricity are able to study at night under the street lights.

Based on stakeholders' feedbacks, the system performance, and observations and lessons learned, a roll-out of the prepayment meters to include more urban communities and possibly phase out the use of conventional meters is strongly recommended. However, considering the limited sample size in this study, a further impact assessment that takes into consideration the 230 prepayment meters should be conducted to provide a more generic conclusion on the system's performance and impacts and to inform a roll-out plan formulation.

I. BACKGROUND

In October 2006, the Liberia Energy Assistance Program funded by USAID and implemented by International Resources Group (IRG), was launched. LEAP is a follow-on and complementary program to the Emergency Power Program launched in July 2006 to restore public electricity supply. Whereas EPP focused on short-term delivery of electricity power to Monrovia and its environs, LEAP is focused on the long-term sustainable delivery of energy services to the whole country. The objective of LEAP is to support the reform of the Liberian energy sector and to create new replicable pilot projects that would provide critically needed electricity to low-income urban and rural communities through and in coordination with USAID's non-energy activities that require modern energy services.

Given the synergies between essential services and development needs such as health, education, sanitation and clean water, telecommunications, small and medium enterprises and overall socio-economic development, LEAP has been collaborating with the Government of Liberia (GOL), bi- and multi-lateral development agencies, the private sector, and non-governmental organizations (NGOs) over the past two years.

The Urban Pilot component of LEAP is focused on providing affordable electricity to low-income urban communities in Monrovia through the use of prepayment meters. Wroto Town in Sinkor and GSA Road Community in Paynesville were the two urban communities selected for the pilot. Following the selection process, introductory and familiarization meetings were held with the communities' leaderships, followed by focus group discussions, a socioeconomic survey of households, technical surveys of structures, and selection of 100 residential structures and a number of institutional structures in each community to participate in the pilot. Considering the absence of electricity for nearly 18 years, an assessment of the wiring needs of the selected structures was done, leading to the supply of basic minimum wiring materials for 97 structures and their subsequent upgrades in Wroto Town.

Further work on the GSA Road pilot project was put on hold pending the buildup of the distribution network in the community. Unfortunately, the buildup has been delayed due to funding shortfall, thereby prompting the transfer of the prepayment meters intended for GSA Road to Bushrod Island with the consent of the community leadership.

In April 2008, only the 27 existing LEC conventional meter customers in Wroto Town were connected with the prepayment meters due to the lack of additional generation capacity at the Congo Town Plant, which feeds the pilot community.

2. INTRODUCTION

This report assesses the impacts of the prepayment metering system on the key stakeholders and the pilot community as a whole. Some of the key impact indicators assessed in this report, based on the four primary stakeholders, include:

Utility – Compatibility with and usefulness of the prepayment system to improving LEC operations, especially in the area of metering, billing, and collection (MBC); reduction of customers arrears; reduction of non-technical losses and the costs of MBC; the number of structures electrified and customers connected in the pilot area; additional residential communities and structures electrified.

Vendor – The number of vending (including vending machines) problems identified and resolved satisfactorily; financial sustainability of the vending operations.

Customers – The number of structures electrified and customers connected in the pilot area; customer ability to control electricity costs and power consumption, as well as satisfaction with prepayment metering system.

Community – Satisfaction with the socio-economic benefits of street lighting and increased security.

Lessons from the prepayment metering system will be used to provide a financial analysis and road map that will serve as the basis for developing a sustainable service model for the LEC's residential service, and the expansion of prepaid meters installation to other communities in Monrovia.

3. METHODOLOGY

The impact assessment employed a survey study, using primary data generated from all urban pilot participants (vendor, customers, community, and LEC), as well as other indirect beneficiaries within the community. From the perspective of the vendor, the assessment focused on the reliability and financial sustainability of the vending system and the number of vending problems identified and resolved satisfactorily. For the customer, the assessment looked at energy consumption patterns, expenditure on energy services, ease of prepaid meter use, expenditure on credits, and social and economic benefits. For the community, the assessment considered the impact of increased street lighting, electricity in schools, clinics and business and corresponding social and economic changes. From the perspective of the utility (LEC), the assessment included reliability of the kWh vending system and electricity supply, advantage and disadvantages of prepayment meters, and revenue expectation for scale-up.

4. FINDINGS

Findings of the assessment were derived from the viewpoint of the primary stakeholders – vendor, customers, the community, and the utility. The findings were drawn from the vendor’s perspective on the vending system and the overall reliability of electricity service and the prepayment system; the customers’ feedback on prepayment metering system, vending and the LEC; observations of the changes in social, economic, and security conditions in the pilot community; and changes observed in customer service delivery with the prepayment metering system in comparison to the conventional metering system at the LEC.

4.1. THE VENDOR’S FEEDBACK

The following feedback is from the perspective of the vendor:

1. Vending operations have been convenient but vending cannot go beyond 5 pm, at which time the server at the master station is shut down.
2. There have been no major problems with the vending except occasional connectivity breakdowns with the server at LEC. Another problem observed by the vendor is with the General Packet Radio Service (GPRS) system during the rainy season. The system can be slow due to inclement weather. The back-up system, based on Global System for Mobile communications (GSM), has not been working. However even if it was working, it was the vendor’s observation that this would be 10 to 15 times more costly than the GPRS.
3. The vending operation is financially sustainable, and the vendor has the technical and financial capacity to handle a large customer base.
4. LEC can swiftly respond to and solve vending problems if and when they occur.
5. Vendor’s pre-purchases have been enough to handle customers’ demand during the weekends but sometimes run out during period of high demand.
6. Vendor is willing and able to vend between 8 to 16 hours a day provided the master station is on at least 16 hours per day.
7. The utility needs to swiftly inform the vendor and customers in case of prolonged system breakdown or power cut. The vendor needs to be informed because this is the customers’ first point of contact.
8. There is a need for more customers’ education about the prepayment metering system.

Table I: Vendor's Monthly Sales and Commission

Month	kWh Sales	US\$ Sales	US\$ Commission
April	6,969	3,206	209
May	14,672	6,749	440
June	14,698	6,761	441
July	13,598	7,615	408
August	9,483	5,405	284
September	10,237	5,835	307
October	12,248	7,471	367
November	14,658	7,915	440
December	11,446	6,181	343
Total	108,009	57,138	3,240
Average	12,001	6,349	360

Figure 1: Vendor's Sales Trend for Nine Months

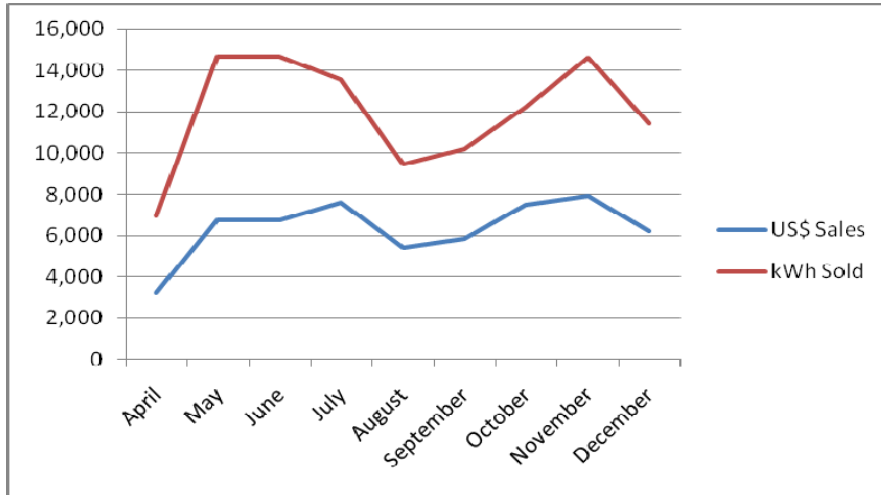
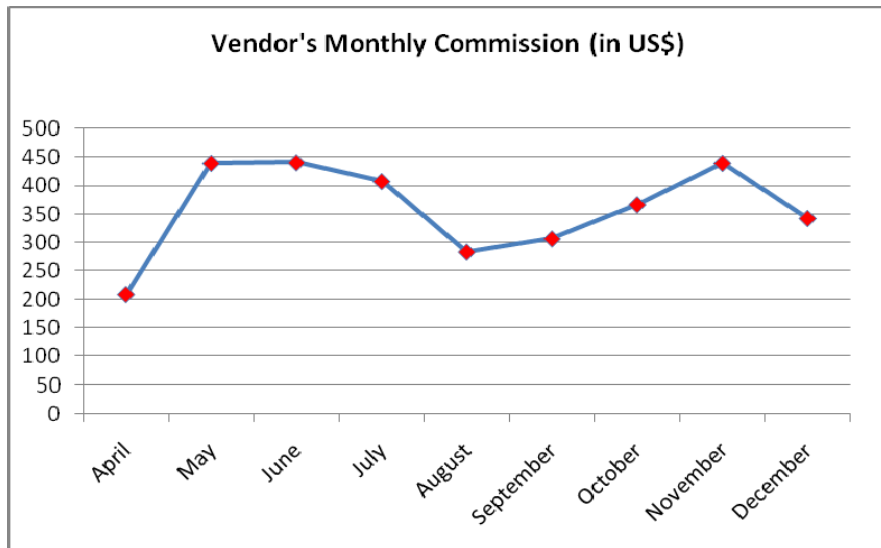


Figure 2: Vendor's Monthly Commission



4.2. CUSTOMERS' FEEDBACK

A surveyed was conducted in Wroto Town to obtain customers' feedback on the *prepaid meter, vendor, and LEC* (see *survey questionnaire in Annex A*). Findings from the survey are presented in the following figures:

Figure 3: Customers Feedback on Prepayment Meters

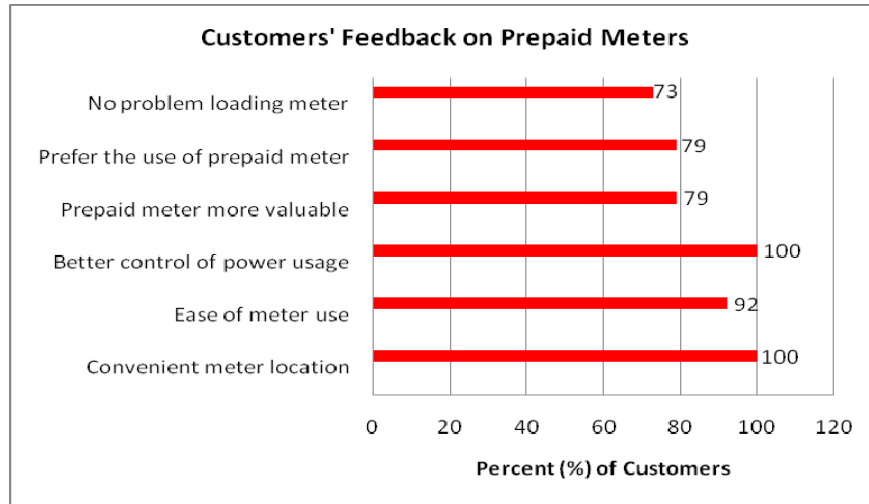


Figure 4: Customers Feedback on Vendor

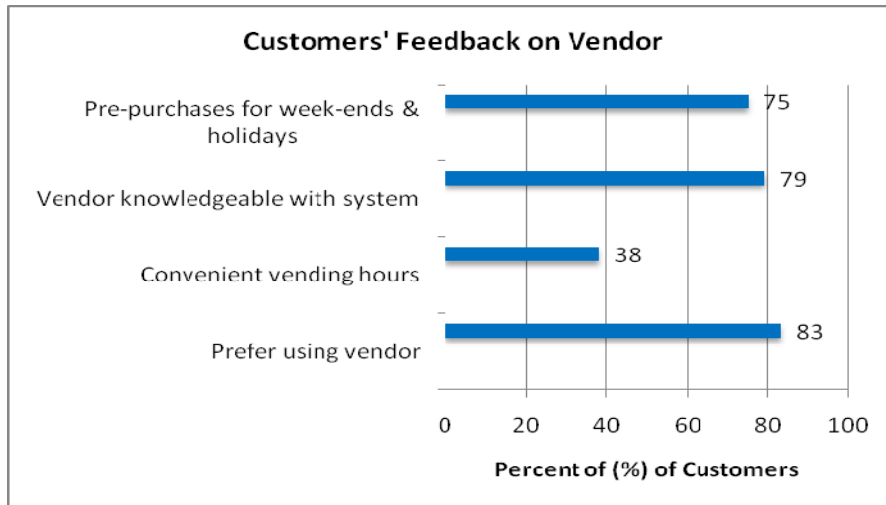
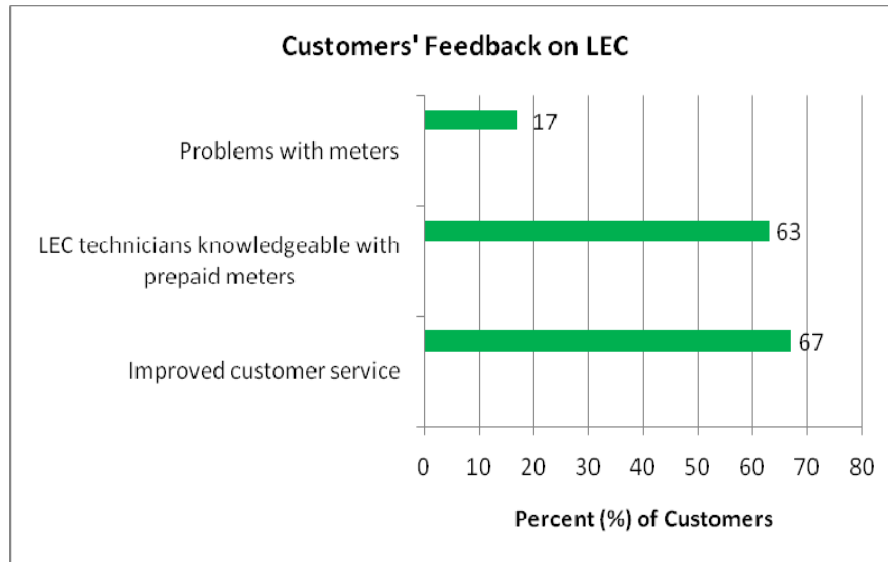


Figure 5: Customers Feedback on Utility



Only three of the 27 customers surveyed experienced problems with their meters during the pilot period. These problems generally involved the tripping of their meters or intermittent switching on and off of the meter. All the customers who encountered meter problems reported that it took LEC at most 24 hours to solve the problem.

4.3. THE COMMUNITY FEEDBACK

From the perspective of the community, the assessment focused on the impact of increased street lighting in the community. The distributional impact of electricity in schools, clinics, business, and corresponding social and economic changes could not be adequately captured due to the project's inability to connect all the 127 customers selected for prepayment meters. The current 28 prepaid meter customers in Wroto Town represent about 22% of the total prepayment customers selected for connection. The two institutions (Apostolic Foundation School and the Dayass Mini Clinic) currently using prepayment represents 28.6% of the number of institutions selected for connection with prepayment meter.

About 50% of the street lights in Wroto Town are currently functioning. Notwithstanding, feedback from the community about the street lights are encouraging. Benefits of street lights as articulated by a cross-section of the inhabitants include:

- a. Improved security
- b. Post dusk businesses/sales
- c. Increased business hours and income (street vendors sell up to 10 pm daily)
- d. Increased income
- e. Reduced theft
- f. Students without electricity can study at night under the street lights



Ma Sando Yates, a Street Vendor in Wroto Town can sell extra hours under the street light. *Credit: Augustus V. Goanue, Center for Sustainable Energy Technology*



Janice Massaley (left) says though their house is yet to be connected, she and her sister can study under the street light that was installed in front of their house. *Credit: Augustus V. Goanue, Center for Sustainable Energy Technology*

4.4. LIBERIA ELECTRICITY CORPORATION'S FEEDBACK

The following feedback is from LEC's perspective:

1. The prepayment metering system is indeed compatible with and useful for improving LEC commercial and technical operations. The objective of effective billing and collection system was achieved as indicated by the collection of 100% revenue from the energy supplied to the 28 customers in Wroto Town. All of them give positive views of the prepayment metering system.
2. 102 prepaid meters have been installed to additional residential communities and structures in Bushrod Island. Total number of LEC prepaid meter customers now stands at 230, with 100 customers energized and the remaining 130 expected to be energized soon.
3. The prepayment meters have helped to reduce arrears normally owed to LEC by customers in the pilot community during the use of conventional meters. The system has also helped to reduce non-technical losses to the LEC as there was no incidence of power theft in the pilot community. The system could help to reduce the operating budget of LEC significantly if scaled, as it reduces the logistics involved in metering, billing and collection.
4. The number of staff time required for connection and disconnection reduced by 7% due to the use of prepayment meter. The time saved from the prepaid meters could be used to improve performance and efficiency.
5. The performance of the prepayment vendor has been satisfactory and the sale of prepaid kilowatt-hours (kWh) has been convenient and smooth, thus meeting the demand of community customers, though there is a need to increase vending hours.
6. The prepaid meter system has boosted the performance of commercial, technical, information technology (IT), and financial performance of the LEC. These include collecting, compiling, analyzing, and interpreting data, and the ability to advise on energy efficiency and conservation.
7. The prepaid meter system has the potential to create development impacts and to achieve the financial sustainability objective provided certain potential operational problems with the master station are solved.

Figure 6: The Integrated Prepayment Meter



Table 2: Prepaid Meter Statistics

Total # of LEC prepaid meter customers	Wroto Town				Bushrod Island			
	Installed meters	Energized	Non-energized	Spare	Installed meters	Energized	Non-energized	Spare
240	128	28	100	5	102	72	30	5

5. PROJECT IMPLEMENTATION AND ITS IMPACTS

5.1. EFFECTIVENESS OF PROJECT IMPLEMENTATION

The project implementation was hampered by a number factors including:

- a. The delay in the delivery of the prepayment meters by ACTARIS, the equipment supplier. The integrated and split meters ordered in mid-2007 were delivered on March 18, 2008 and September 30, 2008 respectively.
- b. Delays in the building of distribution network in Paynesville and the installation of additional generation capacity in Congo Town.

While monitoring was ongoing during the project implementation, LEC was not able to reserve power at the Congo Town Plant to feed into the pilot community to facilitate the connection of all selected customers with prepayment meters upon the procurement of the meters. It was evident that LEC needed revenue to sustain its operations, and therefore reserving power for the pilot in the midst of prolonged procurement process would have led to operational and financial losses. Therefore, the Congo Town Plant was loaded to full capacity. When it was time to install the prepayment meters, LEC and the LEAP team then agreed to replace existing conventional meter customers in Wroto Town with prepayment meters pending the installation of additional generation capacity at the Congo Town Plant. The reverse of this situation is currently taking place in Bushrod Island, where it is possible to energize the entire prepayment meter if the generator is running but the currently number of customers is insufficient to run the generator.

5.2. PROJECT IMPACTS

Capacity Development – Modern and improved Information and communication technologies (ICTs) at LEC, new skills in the installation of prepayment meter system, skills in electricity vending by non-utility staff.

Customer Service – Improved service delivery, no meter reading and bill distribution, no need for disconnections and reconnections.

Social – Improved health care delivery, education services, and religious activities.

Economic – Extract job creation, improved and increased commercial activities, and growth in business profitability, longer post-dusk sales, and higher consumer draws.

Security – Brighter surrounding, reduced theft in the community, inhabitants are able to stay out much longer during evening hours.

6. OBSERVATIONS AND LESSONS LEARNED

The following observations are based on the performance of the prepayment meters installed since April 2008 in the pilot community:

- All meters have worked well with negligible technical problems; the project was generally successful in the context of the Wroto Town Pilot.
- The use of non-utility vending has worked very well, providing the utility with the equivalent of one large creditworthy customer who has had no problem recovering money from the 27 end-use customers. This fact has attracted the interest and confidence of potential independent power project (IPP) developers.
- On average, prepayment customers appear to manage their purchases and power consumption better than their counterparts on conventional meters. Average consumption for prepayment customers has dropped by 12% and none of the 27 customers have been disconnected. In contrast, 71 out of 106 on conventional meters in the same area have been disconnected for non-payment at least once.
- Although so far no theft or meter tampering has been reported, the current wiring standards leave the integrated prepayment meters with the same level of vulnerability to electricity theft as conventional meters due to the long cable loop between the utility pole and the meter. The split meters are expected to resolve this as the metering unit is up on the pole and the customer has to ensure that no one taps into the cable loop at his expense. Unfortunately, the supplier has had problems with the design and delivery of the split meter and this is yet to be tested.
- If the utility were to connect all new customers on prepayment meters it would not need to extend its current metering, billing, and collection system. The staff can be redeployed towards energy management and theft control duties.
- Since vending can only take place when the mobile points of sale (MPOS) can communicate with the System Master Station, the absence of a 24/7 service has proved to be an inconvenience. Therefore, any roll-out will have to give consideration to providing 24/7 availability to the master station and some vending points.
- Considering the slow response from ACTARIS (prepayment metering system supplier), the utility does not have trained personnel with capability to repair the meters in case of breakdown; neither do they have the ability to upgrade, modify, and recover the system and prepayment meters. Therefore, in case of system breakdown, all the prepayment customers will go out of power for a prolonged period until ACTARIS can send staff from South Africa to restore the system.
- Apart from data back-up, there is currently no system back-up of the EVG Server (responsible for communicating between the customer database and the vendor) at the master station. LEC does not have the technical capacity to troubleshoot the system (both hardware and software) in case of malfunction. It may take weeks or months to recover the system if and when there is a breakdown.
- There are no spare meters and MPOS in stock to serve as back-ups for existing ones in case of theft, damage, malfunction, etc.

- Tariff changes cannot be effected more than once a month with the prepayment system; however unlikely, but considering the frequent changes in fuel prices, this may become a potential problem in the event it does occur.
- The GSM vending back-up (using SMS) has not worked since the system went live and ACTARIS has not corrected the problem to date.
- The training conducted by ACTARIS for the prepayment metering system was inadequate, and therefore further training is necessary to sustain the system.
- The LEC has not put in place an effective communication mechanism to swiftly inform the vendor and customers in case of system breakdown and/or power cut.
- Though the assessment gives positive indications that the prepayment metering system is the way forward, the limited sample size of 27 customers cannot be used to generalize the findings. However, the findings are sufficient to maintain all the prepayment meters intended for the pilot project.
- ACTARIS does not have a Disaster Recovery Plan in place that will restore normalcy to the prepayment system in a reasonably short period in the event of a disaster and – or that plan is not known to the IT Department.
- It is also not known if the agreement with ACTARIS includes a timetable for onsite post evaluation of the system.

7. CONCLUSION

Results from the pilot project are encouraging and demonstrate that prepayment metering is the strategy through which LEC can improve its creditworthiness, which is essential for bankable power purchase agreements needed for system expansion.

The use of non-utility vending is an effective privatization of the electricity retail business, which brings the power sector in Liberia in line with international best practice.

The best financial model for the prepayment system is the identification and use of a creditworthy and community-based vendor for the bulk purchase of electricity from the utility and retail to customers.

There is a need to exercise caution in evaluating the observations thus far because less than half of the 230 prepayment meters installed have been energized. Important information that still needs to be measured and evaluated includes the exact costs and benefits, alternative suppliers and customer service options based on enhanced conventional metering.

8. RECOMMENDATIONS FOR ROLL-OUT

Based on stakeholders' feedback, the system performance, observations, and lessons learned, it is evident that prospects for the roll-out of the prepayment meter program to include more urban communities and possibly phase out the use of conventional meters are very good. However, successful roll-out of the project can be assured only if the following recommendations are considered:

1. The remaining 130 prepayment meters that are already installed should be energized as quickly as possible in order to adequately measure and evaluate important information and the exact costs and benefits, alternative suppliers and customer service options.
2. Human resource capacity development (technical training) should be carried out with the relevant LEC staff to facilitate the repair of the prepayment meters, MPOS, and system software as well as other related hardware.
3. The number of spare prepayment meters should be increased, including spare MPOS as back-ups in the event of the equipment malfunction, theft or damage by natural disaster.
4. Mechanism should be put in place to keep the master station and the server on for at least 16 hours daily to facilitate vending beyond the official working hours of the LEC. This could be done through the use of a solar power system or battery back-up.
5. Considering the limited sample population in this assessment, a further probe to include all 230 prepayment meter customers should be conducted in a reasonable period of time in order to generalize the findings.

ANNEX A: CUSTOMER SURVEY QUESTIONNAIRE

LEAP Urban Pilot Project

Wroto Town Community, Sinkor, Monrovia

Impact Assessment Survey Questionnaire of Prepaid Electricity Meters

Customer Name: _____ Meter Number: _____

Phone Number: _____ Date: _____

Respondent's Name: _____ Interviewer: _____

Meter

- | | Yes | No |
|---|--------------------------|--------------------------|
| 1. Is your prepaid meter conveniently located? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Is your prepaid meter easy to use? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Do you control your power usage better? | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Does your prepaid meter give you better value? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Do you prefer the prepaid meter over the conventional meter? | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Do you have problem loading your prepaid meter? | <input type="checkbox"/> | <input type="checkbox"/> |

Vendor

Do you like using a vendor to buy power?

- | | | |
|---|--------------------------|--------------------------|
| 1. Are the vending hours convenient for you? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Is the vendor knowledgeable with the prepayment system? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Do you usually buy tokens in advance for week-ends and holidays (when vending will be closed) in case you run out of tokens? | <input type="checkbox"/> | <input type="checkbox"/> |

LEC

- | | | |
|---|---------------------------------|----------------------------------|
| 1. Is customer service improved with the prepaid meter? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Are LEC technicians knowledgeable with the prepaid meter? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Have you encountered any problem(s) with your prepaid meter? | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. If yes, what was the problem(s)? _____ | | |
| 5. How long did it take to solve your problem(s)? | <input type="checkbox"/> 12 hrs | <input type="checkbox"/> 24 hrs |
| | <input type="checkbox"/> 8hrs | <input type="checkbox"/> > 48hrs |

What is your overall feeling about the use of the prepaid meter compared to the conventional meter?

ANNEX B: PREPAYMENT ELECTRICITY VENDOR SELECTION CRITERIA

The following are the criteria set for the prepayment electricity vendor in the pilot communities:

1. Must be located in the pilot community.
2. Must be honest, reliable and trusted by the community.
3. Must have experience in cash management and similar or some form of vending activity such as call phone scratch cards, etc.
4. Must be willing to show financial record keeping for current business (which will be kept confidential).
5. Must be willing and able to keep records of transactions.
6. Must be open and available for sales for minimum 8 hours daily initially and 16 daily based on demand.
7. Needs to be involved in at least one other business that is opened to the public all day and at least half of the night.
8. Must be numerate sufficiently to operate a cell phone and/or an MPOS vending equipment satisfactorily so as to meet vending objectives.
9. Must be capable of coping with the training needed to operate as an effective and efficient community vendor.
10. Must have the ability to pre-purchase at least US\$5,000.00 kWh worth of energy from the LEC including transaction cost so as to meet customers' periodic demand.
11. Must be available at all times (vending hours).
12. Expected to possess good human/customer relations so as to satisfactorily deal with electricity kW buyers.

APPENDIX C: VALIDATION WORKSHOP AGENDA

LIBERIA ENERGY ASSISTANCE PROGRAM (LEAP) URBAN COMMUNITY DEVELOPMENT PILOT PROJECT

Workshop for the Review and Validation of Project Impact Assessment Report

February 13, 2009
10:00am
LEC Conference Room

AGENDA

9:30 – 10:00am	Registration
10:00 – 10:05am	Welcome and Introduction Mr. Philip Freeman, LEC
10:05 – 10:30am	Overview of the LEAP Urban Pilot Project Mr. Simbarashe Mangwengwende, IRG
10:30 – 11:15am	Presentation of the Impact Assessment Findings Mr. Augustus Goanue, CSET
10:30 – 11:00am	Tea/coffee served in parallel
11:15 – 12:30 noon	Review and validation of findings and recommendations: Issues & Comments, participants
12:30 – 1:00pm	Wrap-up and next Steps a) IRG b) LEC
1:00 – 1:15pm	Closing Remarks Mr. Joseph Mayah, Acting MD, LEC
1:15 – 2:00pm	LUNCH

ANNEX D: LIST OF VALIDATION WORKSHOP PARTICIPANTS

LIBERIA ENERGY ASSISTANCE PROGRAM (LEAP)

URBAN COMMUNITY DEVELOPMENT PILOT PROJECT

Workshop for the Review and Validation of Project Impact Assessment Report

Attendance & Contact List

No.	Name	Institution	[REDACTED]	[REDACTED]
1	Augustus Goanue	CSET	[REDACTED]	[REDACTED]
2	Edward M. Konneh	MLME	[REDACTED]	[REDACTED]
3	Eyvonne Bright	SHARK's	[REDACTED]	[REDACTED]
4	Fobay F. Dorbor	LEC	[REDACTED]	[REDACTED]
5	Henry Lewis	LEC	[REDACTED]	[REDACTED]
6	Ivan Sims	IRG/LEC	[REDACTED]	[REDACTED]
7	Joseph T. Mayah	LEC	[REDACTED]	[REDACTED]
8	M. Hady Sherif	CSET	[REDACTED]	[REDACTED]
9	Martha Lackay	LEC	[REDACTED]	[REDACTED]
10	Nathan F. Revees	CSET	[REDACTED]	[REDACTED]
11	Philip G. Freeman	LEC	[REDACTED]	[REDACTED]
12	Richard Pearce	IRG	[REDACTED]	[REDACTED]
13	Simbarashie Mangwengwende	IRG	[REDACTED]	[REDACTED]
14	Sylvester Massaquoi	MLME	[REDACTED]	[REDACTED]
15	Thelma Saunders	IRG/LEC	[REDACTED]	[REDACTED]

ANNEX E: GLOSSARY

- Evaluation:** The systematic collection of information about activities, characteristics, and outcomes of a program or project that may lead to inform and improve the effectiveness of the program.
- Impact:** The long-term effect on the stakeholders, institutions and environment caused by a program or project.
- Indicator:** An easily measurable criterion that provides information on the trends or changes after a program or project intervention.
- Monitoring:** The systematic process of observation and collection of information at the individual household or community level to ascertain progress or impact of a program or project.
- Output:** The direct tangible measurable results of products delivered to the intended beneficiaries of a project intervention.
- Outcome:** The specific changes in attitude or and behavior, increase in knowledge and skills of stakeholders resulting from activities generated by a program or project intervention. Outcomes are often cumulative results of an output.
- Stakeholder:** A person or organization that has an influence or interest in the program or project.

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