



USAID'S LIBERIA ENERGY SECTOR SUPPORT PROGRAM (LESSP) YEAR FOUR WORK PLAN OCTOBER 2013 – SEPTEMBER 2014

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USAID'S LIBERIA ENERGY SECTOR SUPPORT PROGRAM (LESSP)

YEAR FOUR WORK PLAN

October 2013 – September 2014

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Strategic Objectives:

- SO1: To extend grid electricity throughout Monrovia and its environs;
- SO2: To develop hydro capacity and other renewable energy sources;
- SO3: To expand grid electricity to other urban areas and some rural areas; and
- SO4: To improve legal, institutional and regulatory framework in the energy sector.

Cover Photo: Booker Washington Institute (BWI) students and LESSP Staff examine the 5kW Lister diesel engine during operational trials and data collection work, December 2013. Photo Credit: Freeman Woahloe

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ACRONYMS AND ABBREVIATIONS

AfDB	African Development Bank
APL	All Power Labs
BEO	USAID/WDC Bureau Environmental Office
BOQ	Bill of Quantities
BWI	Booker Washington Institute
CBO	Community-based Organizations
CDA	Cooperative Development Agency
CFL	Compact Fluorescent Lamp
COP	Chief of Party
COR	Contracting Officer's Representative
DCA	USAID's Development Credit Authority
DCOP	Deputy Chief of Party
DQA	Data Quality Assurance
EHELD	Excellence in Higher Education for Liberian Development Project
ELWG	Energy Law Working Group
EPL	EcoPower Liberia
ERB	Energy Regulatory Board
ESG	Energy and Security Group
ESOL	Engineering Society of Liberia
EU/EC	European Union/European Commission
FAR	Federal Acquisition Regulations
FED	Liberia Food and Enterprise Development Project
<i>FIDIC</i>	International Federation of Consulting Engineers
GDA	Global Development Alliance
GEF	Global Environment Fund
GOL	Government of Liberia
Greencons	Green Consultancy Inc.
HEI	Higher Education Institute
HFO	Heavy Fuel Oil
HQ	Head Quarters
HR	Human Resources
IBEX	Liberia Investing in Business Expansion Project
ICT	Information and Communication Technology
IEE	Initial Environmental Examination
KBPP	Kwendin Community Biomass Pilot Power Project
LEC	Liberia Electricity Corporation
L-EPA	Liberia – Environmental Protection Agency
LESSP	Liberia Energy Sector Support Program
LMEP	Liberia Monitoring & Evaluation Project
LOE	Level of Effort
MC	Management Contractor
MEC	Monitoring, Evaluation, and Communications Specialist
M&E	Monitoring and Evaluation
MHI	Manitoba Hydro International
MLME	Ministry of Lands, Mines and Energy
MOU	Memorandum of Understanding
MRMHPP	Mein River Mini Hydropower Pilot Project
MV	Medium Voltage
NEP	National Energy Policy (Liberia)

NIC	National Investment Commission
NORAD	Norwegian Agency for Development
NRECA	National Rural Electric Cooperative Association
NVE	Norwegian Water Resources and Energy Directorate
O&M	Operation and Maintenance
OJT	On-the-Job
PIDS	L-MEP's Performance Indicators Database System
PMP	Performance Monitoring Plan
PMU	Winrock HQ Project Management Unit
PPP	Public Private Partnership
PRS	Poverty Reduction Strategy
PV	Photovoltaic
RE	Renewable Energy
RFP	Request for Proposal
REFUND	Renewable Energy Fund
RET	Renewable Energy Technologies
RREA	Rural and Renewable Energy Agency
SBEP	Sorlumba Community Biomass Electricity Pilot Project
SHOPS	Small Holder Oil Palm Support Project
SMP	Stella Maris Polytechnic
SREP	Scaling-up Renewable Energy Program
UL	University of Liberia
UNIDO	United Nations Industrial Development Organization
USAID	U.S. Agency for International Development
WAPP	West African Power Pool
WB	World Bank
WI	Winrock International

I. EXECUTIVE SUMMARY

The U.S. Agency for International Development's (USAID) Liberia Energy Sector Support Program (LESSP) responds to the priority set by the Government of Liberia (GOL) of rehabilitating the country's electricity infrastructure, an integral component of the nation's macroeconomic development strategy, as set forth in its Poverty Reduction Strategy (PRS). Specifically, LESSP contributes to the following goals articulated in the PRS:

- Builds the capacity of the restructured Ministry of Lands, Mines and Energy (MLME);
- Increases energy access in Monrovia and three rural counties;
- Increases Liberia's small, hydropower, and biomass generation and distribution capability and explores additional generation options from other renewable energy sources; and
- Improves legal, institutional, and regulatory frameworks within the electricity sector.

LESSP has three overarching objectives:

- Strengthening GOL's capacity to implement plans for rural electrification, as expressed in the National Energy Policy (NEP);
- Establish commercially viable pilot plants that provide renewable energy services to population centers in Bong, Lofa, and Nimba Counties; and
- Collaborate with international donors for the expansion of Monrovia's power grid.

These three objectives are far-reaching, encompassing electricity sector regulation and institutional reform, renewable energy (RE) pilot power plant construction and commercialization, strengthening of community-based organizations (CBOs) and university curricula, public private partnership project development, and support for the Rural & Renewable Energy Agency (RREA) and the Liberia Electricity Corporation's (LEC) management contract. At the same time, a common thread connects the various subcomponents: a focus on renewable energy as a key tool for promoting economic growth.

This fourth year work plan includes the currently planned final year of LESSP operations and activities designed to:

- Ramp up LESSP Objective Two pilot RE construction activities;
- Complete Objective Three LEC support of RE generation equipment and MV distribution line material support procurement on the Monrovia grid;
- Carry out Objective Two electricity cooperative and power company training activities;
- Complete Objective One training and policy support activities; and
- Close out/demobilization of the LESSP.

A. LESSP LIFE OF PROJECT (LOP) ANTICIPATED RESULTS

LESSP will meet or exceed the following outcomes by end of September 2014.

Objective One:

Liberia Energy Sector Support Program (LESSP) – Year Four Work Plan (October 2013 – September 2014)

- NEP for Renewable Energy adopted by the MLME;
- Legal and regulatory framework provided to GOL for private sector participation and investments in national RE activities;
- Technical and managerial capacity of staff forming RREA and managing Renewable Energy Fund (REFUND) deployed and strengthened to lead expansion of RE services in rural areas;
- Public and private sector support for the RREA and REFUND generated promoting and enabling the future expansion of viable rural electricity projects; and
- Action plan for the development of a GOL Energy Law and an independent electricity regulatory commission accepted by GOL Ministry working group delegates and delivered to MLME.

Objective Two:

- One mini hydroelectric pilot plant designed, tendered, awarded, and constructed;
- Two biomass power pilot plants designed, tendered, awarded, and constructed;
- One solar photovoltaic (PV) pilot power system designed, tendered, awarded, and constructed;
- Liberian human resources (HR) at MLME and RREA in RE design and project management strengthened;
- Each LESSP-funded rural electricity system supported by a community and/or private sector (company) management and have an agreed upon cost-recovery program and trained operation and maintenance (O&M) staff. This includes the completion of a management and O&M training program in Year Four;
- Access to electricity outside of Monrovia increase from 2% to at least 10% in targeted community areas; and
- Technical capacity of three centers of higher education in science, engineering, and RE technologies strengthened.

Objective Three:

- Procurement of materials and equipment for one PV RE generation subproject to add capacity and to reduce electricity production cost to the city of Monrovia power/electricity system as owned and operated by the LEC, benefiting existing new customers through the reduction of tariffs;
- Procurement of materials for one new MV distribution line;
- Extension of grid will also enable LEC to expand customer base through addition of new consumers. ; and
- Completion of the Booker Washington Institute (BWI) Liberia Biomass Energy Center.

B. LESSP INTERMEDIATE RESULTS AND INDICATORS

Within the stated objectives and activities, LESSP will track and report upon intermediate results, successes, and opportunities. These include opportunities to promote RE in rural areas, with commercial entities, and provide training and other technical assistance in a

manner that compliments current LESSP activities and does not require additional funds or time. Also, all such complimentary work shall be presented to USAID for review and agreement prior to implementation.

C. BUDGET

Detailed budget to be submitted with Final Work Plan, after bids received and evaluated for four pilot projects.

D. PROJECT CLOSE OUT

During Year Four, the LESSP Team will plan and execute the orderly close out of the project in accordance with FAR 4.804, the LESSP contract, and ADS requirements. Such close out plans and activities will be discussed with USAID as they progress in the final four months of the project to gain input and agreement on non-expendable property (NXP), equipment and other material disposition.

As part of the close out process, the LESSP Team will submit:

- a Property Disposition Plan and final inventory (four months prior to end of project);
- a plan for the phase-out of in-country operations, including storage, handling, and disposal of contract files;
- a delivery schedule for all reports or other deliverables required under LESSP;
- a timetable for completing all required actions;
- a letter confirming settlement of all subcontracts; and
- a final invoice.

The planning process will begin six months before a project ends. The COP, in consultation with the Home Office will prepare a demobilization plan six months before the end of the project. The LESSP team will include all expatriate and local team members in planning. Monthly meetings are required in the first two or three months of planning where all field staff members can discuss, change, and modify the close-out plan. During the last 90 days, meetings occur on a weekly basis to further refine procedures. These meetings allow the close-out team to assure everyone's cooperation and to monitor progress in fulfilling the planned activities.

E. PROJECT ADMINISTRATION

The LESSP team will continue to effectively manage the administration and operations of LESSP. WI headquarters will continue to provide rapid response to the field team with information and support that assists the field team in meeting project objectives. In Year Four, Project Manager will travel to the field office for approximately two weeks to provide general project support. One additional trip is anticipated in Year Four from home office to assist in close out of the project. The LESSP Team will continue to comply with all USAID

reporting requirements. During LESSP construction period, updates to the construction schedule will be submitted to USAID monthly. Technical and financial quarterly reports will be submitted to USAID within 30 days of the end of each quarter. A final progress report will be submitted within 90 days of the end of the contract. In line with the LESSP team's commitment to fully support USAID's reporting objectives, program staff will be available during the reporting cycle to provide up-to-date data or other information upon request.

F. CROSS CUTTING ISSUES

In Year One, LESSP developed a Cross-Cutting Issues (Gender, Youth, and ICT) Integration Plan to guide the LESSP team throughout the implementation of project activities to ensure cross-cutting issues remain at the forefront of project activities, including: planning, design, training, community ownership transfer, and the selection of beneficiaries and trainees. With its focus on improving energy infrastructure, LESSP activities and results can positively impact cross sector areas, designated as USAID priorities, including local capacity building, democracy and governance, environmental sustainability and economic growth. With this work plan's activities, LESSP will continue to consider ways to integrate youth, gender and information and communication technology (ICT). For example, to the extent practicable, LESSP will continue to:

- Provide employment opportunities to Liberians in the implementation of the construction of pilot plants and electricity sector value chain.
- Build capacity of Liberian local government, women, and youth to manage and maintain electricity infrastructure.
- Increase citizens' participation with local government on the identification and prioritization of community needs for electricity access.
- Support local communities and governments leveraging private funds to provide affordable and accessible electricity services.
- Encourage community participation and empowerment in the planning, design, construction, and maintenance of electricity infrastructure.
- Demonstrate US commitment to Liberia's reconstruction and poverty alleviation.

2. LESSP BACKGROUND

The purpose of USAID's LESSP is to increase access to affordable, renewable energy services in geographically focused rural and urban areas, in order to foster economic, political, and social development. The ultimate impact of the activity, i.e. the change that is expected in targeted areas at project completion includes:

- Increased and sustainable access to and affordability of electricity within urban and rural poor communities;
- Improved performance of local governments, civil society, and the private sector in monitoring, regulating, and managing the use of renewable energy;
- An increase in the percentage of households and businesses utilizing clean energy and a corresponding increase in economic activity; and
- Policy changes that improve the investment climate for the electricity sector.

USAID plays a leading role in building Liberia's energy sector. Its successful collaboration with the GOL and other donors during the Emergency Power Project (EPP) and Liberia Energy Assistance Program (LEAP) has provided a strong platform and valuable lessons for expanding access and improving the affordability of electricity to urban and rural dwellers. LESSP will mobilize the public and private sectors to develop the country's diverse and plentiful renewable energy resources.

LESSP will focus efforts in three counties: Bong, Nimba, and Lofa counties. The selection of these counties was based on the fact that the majority of Liberia's population (outside of Monrovia) resides in these three counties. In addition, LESSP will foster synergies with other USAID-assisted agriculture, health, and education projects that are based in these counties.

LESSP will continue supporting MLME, Rural and Renewable Energy Agency (RREA), and the Liberia Electricity Corporation (LEC), to strengthen institutional capacity and expand the generation capacity and customer base in Monrovia for electricity distribution.

USAID Liberia, in consultation with the GOL, donor community, and other stakeholders, has identified RE as an underutilized resource that could have tremendous impact on the country's development. In order to exploit these resources in the most cost-effective and expedient way, LESSP will work with the GOL to implement policies that create an environment conducive to foreign investment and for Liberian entrepreneurs to participate in the growing market for renewable energy technology (RET) and services.

LESSP will establish power projects that will demonstrate the viability of RET, hydro, and biomass power technologies, for rural communities. LESSP will also assist the LEC with the installation of a utility interconnected solar photovoltaic (PV) power system, the first of its kind in Liberia. The intent is that this type of project will be replicated by other non-US government (USG) donors, the GOL, and private sector investors over time.

The establishment and management of these renewable energy models will involve public-private partnerships (PPPs possibly employing USAID's GDA model) and LESSP shall pursue opportunities to partner with commercial-scale investors, where possible. Concurrently, LESSP's pilot project work will help support the development of a skilled workforce capable of constructing, maintaining, and sustaining infrastructure.

Under the US Foreign Assistance framework's Economic Growth Objective, USAID Liberia's assistance will be leveraged to increase access to modern energy services. LESSP will pursue the activities, outlined in Diagram I, which are consistent with the USG assistance framework, the GOL's PRS, Liberia's National Energy Policy, and the USAID-GOL bilateral assistance agreement.

Diagram 1: LESSP Activities Map

LESSP Goal:

To increase access to affordable, renewable energy services in geographically focused rural and urban areas in order to foster economic, political, and social development.

Objective 1 (CLIN 1)

Strengthen GOL's capacity to implement plans for rural electrification as expressed in the National Energy Policy.

Tasks/Activities

- 1.1 Conduct human resources skills assessment of RREA.
- 1.2 Execute a training plan for RREA and the REFUND.
- 1.3 Develop an action plan for a new ERB.

Objective 2 (CLINs 3, 4, 5)

Establish commercially viable pilot plants that provide renewable energy services to population centers in Bong, Lofa and Nimba counties.

Tasks/Activities

- 2.1 At least one mini hydroelectricity power system rehabilitated or constructed.
- 2.2 Three biomass plants constructed.
- 2.3 Produce two additional power systems in other renewable energy technologies, funds permitting.
- 2.4 Support community-based organizations and businesses to operation LESSP power systems.

Objective 3 (CLIN 2)

Collaborate with other international donors for the expansion of Monrovia's power generation, transmission and distribution network.

Tasks/Activities

- 3.1 Manage a fund for the purchase of electricity generation, transmission and distribution materials needed to connect low and middle income customers.

Objective 2 Sub-Tasks

- 2.3.1 Undertake appropriate feasibility studies & economic analyses for proposed renewable energy power plants.
- 2.3.2 Develop TOR for EPC-type contracting mechanism to build the facilities (waiver granted to utilize other than EPC-type contracting mechanism).
- 2.4.1 Assess and create a database of organizations involved with community and cooperative development in target areas.
- 2.4.2 Provide training and material for cooperatives and businesses operating power systems.
- 2.4.3 Strengthen centers of higher education, vocational training with renewable energy curriculum.
- 2.4.4 Secure GDAs/PPPs with non-traditional resource partners to expand delivery of renewable energy.

Objective 3 Sub-Tasks

- 3.1.1 Work with MC contractor to develop procurement system that ensures all subcontracts are competitively subcontracted. Sit on selection committee and approval final subcontracts. Monitor all subcontracts to ensure delivery of all agreed upon deliverables.
- 3.1.2 Release funds for procurement of equipment to MC contractor based upon successful completion of the subcontracts and proof of acceptance of all deliverables.
- 3.1.3 Work closely with the MC contractor to study, design and provide technical assistance for construction of the PV power generation system for the LEC and for extension of LEC grid to the University of Liberia Fendell campus.

3. OBJECTIVE ONE:

STRENGTHEN THE GOL'S CAPACITY TO IMPLEMENT PLANS FOR RURAL ELECTRIFICATION AS EXPRESSED IN THE NATIONAL ENERGY SECTOR POLICY

Team Leader:	Energy Sector Reform Specialist, Judy Siegel, ESG
Supporting Team Members:	COP; STTA, Pierce Atwood
Collaborating partners:	MLME, RREA, World Bank's (WB) Catalyzing New Renewable Energy in Rural Liberia project; NORAD's Water Resources and Energy Directorate (NVE) and other TBD training providers.
Year Four Deliverables:	Additional Inputs to Energy Law, and ERB Action Plan, as requested by MLME and support for the REFUND Operating Guidelines as, requested by RREA

A. OVERVIEW

The RREA was created by the GOL (Executive Order 23) in January 2010 to facilitate and accelerate the economic transformation of rural Liberia by promoting the commercial development and supply of modern energy products and services through private sector development and support of community initiatives. RREA is also responsible for managing a new Rural Energy Fund (REFUND). As part of its support to Liberia, USAID is partnering with the GOL, through MLME, to help establish and build the capacity of the RREA to strengthen and support the Agency to achieve its mission.

The following defines the tasks associated with Objective One:

Task 1.1: LESSP shall conduct a skills assessment of human resources within the MLME. LESSP shall utilize the skills assessment as the basis for developing a training plan that will help build technical and managerial capacity of the MLME to implement its plans for rural electrification.

Task 1.2: LESSP shall develop and execute a training plan on the basis of results from Task One. A prime focus under this task will be assisting the MLME build capacity of staff associated with the fledgling Rural Renewal Energy Agency RREA and the REFUND, as elaborated in the National Energy Policy.

Task 1.3: LESSP shall develop an action plan for an electricity commission. The establishment of an independent regulator will reduce government interference/control and therefore improve the enabling conditions for private

sector participation in the energy sector. LESSP's technical assistance shall result in a detailed action plan that the GOL can use to create this important institution.

The anticipated results during the life of project are:

- Through a skills assessment and training, the technical and managerial capacity of RREA staff will be strengthened to expand energy services in the rural areas and support the development of viable rural electrification projects by the public and private sector;
- REFUND operating guidelines established and launching of the fund;
- An action plan for the development of an independent electricity regulatory board, to include inputs by GOL entities, key donors, and other stakeholders; and
- National Energy Policy (Energy Law) for renewable energy implemented.

B. YEAR FOUR ACTIVITIES, RESULTS, DELIVERABLES

Task # 1.1: Skills Assessment

During Year One, a skills assessment was completed, which involved an assessment of RREA staff capabilities, as well as identification of gaps and the associated need for additional skillsets. Information obtained from the report provided the basis for developing and implementing RREA/REFUND training priorities for Task Two.

It is understood that capacity building is best served in a continuous fashion. However, allocation of sufficient funds for the construction and sustainability assurance of LESSP pilot projects directs that no additional training for increasing managerial skills of RREA staff individuals will take place in Year Four. LESSP will include RREA staff in project activities to ensure commitment to pilot projects.

a) Year Four Results/Deliverables

- None

Task # 1.2: Develop and Execute Training Plan

In Year One, training courses were conducted for RREA Directors in program and financial management. MLME staff was trained in RETSCREEN Clean Energy Project Analysis Software. In Year Two, individualized training programs were developed for RREA Directors who attended courses at accredited institutions in Africa and Canada, which select RREA staff also attended.

The RREA/MLME training is deemed complete. LESSP has met Indicator Five by training 41 government officials in human resources, energy policy, regulation, and other related topics. In Year Four, LESSP will include RREA staff in capacity building activities to increase technical capacity on RE technologies.

a) Year Four Results/Deliverables

- One RREA official (Technical Director) trained on Hydropower Operations and Management under the VOLTEC project training program
- One MLME Official trained on Hydropower Operations and Management under the VOLTEC project training program
- Following on the delivered final REFUND, operating guidelines will be provided if requested by the RREA. Support for this activity is dependent upon RREA priorities and actions.

Task # 1.3: Energy Law Revision and ERB Action Plan

Energy Law: In Years One and Two, LESSP conducted a review of the 2009 Energy Law. LESSP's detailed comments were submitted to USAID, MLME, RREA, Manitoba Hydro International (MHI), LEC, and key donors. Follow-up meetings with the MLME and eight other GOL Ministries and agencies MLME and LESSP were conducted and the draft law has been updated to reflect inputs from stakeholders and donors. As of the writing of this report, the revised draft of the 2009 Energy Law was with the MLME to determine next steps.

In Year Three, LESSP provided support to continue to move the energy law forward. Follow-up consultations, additional stakeholder meetings, and re-drafting of the law occurred, as requested by the MLME. Energy law review was provided to government and key stakeholders. Review of the energy law was completed by nine GOL agencies vis-a-vis the Energy Law Working Group (ELWG).

There is some concern that these provisions could result in a law that would maintain the status quo. In the LESSP modification exercise that was finalized in September 2013, USAID did not include additional funding for LESSP activities to provide additional services to the MLME to support the enactment of the new Energy Law, with the exception of some Energy and Security Group (ESG) and Pierce Atwood staff LOE to provide targeted support, if/as requested by the Mission.

ERB Action Plan: LESSP took a lead role in developing a plan for the creation of an Electricity Regulatory Board (ERB) for Liberia that sets specific milestones and mechanisms. Preparation of the ERB action plan entailed tariff design, public-private partnership

formation, licensing, public hearings, customer service, dispute resolution and other areas. The LESSP team drew upon expertise from other team members (e.g., Pierce Atwood and ESG) to ensure that international best practices in energy sector regulation were followed. The ERB blueprint was designed to allow the evolution and incorporation of new ideas and processes, for the growth of the sector. In its early development, it was envisioned that the ERB would undergo a period of incubation and capacity development, with MLME support, and then become an independent entity. The MLME possesses the primary electricity experience within Liberia (in addition to LEC).

In Year One, the LESSP team completed a draft ERB Action Plan. The plan provides a step-by-step roadmap for the government in establishing and developing the ERB. It also includes a menu and schedule of training topics to support ERB development in Years Two through Four, including a focus on tariffs, licensing assistance to the MLME, service quality standards and enforcement, and customer service and dispute resolution. The establishment of an ERB is a significant undertaking for any country, even under the best of conditions. The process is made even more challenging when the country conditions are not ideal (e.g., an uncertain political and institutional environment, weak utilities, power deficits and shortages, and a general environment of economic instability). The ERB action plan addresses the key steps and decision points, enabling instruments (i.e., legislation, policy, etc.), and a collaborative process with the domestic and international community to ensure the highest degree of buy-in and support for the new Commission.

In Year Two, LESSP updated the ERB Action Plan based on comments received from MLME members. However, as the ERB is linked to the enactment of the new Energy Law, additional work on the Plan will only be conducted if/when the Law nears enactment. LESSP met indicator six, the development and submission of the new electricity regulatory board (ERB) action plan to USAID.

As in Year Three, the LESSP team will remain available in Year Four to provide technical assistance and support to MLME and others, as requested, and as allowed by the budget, to finalize the ERB Action Plan.

Table I: Indicators to be met at the end of Year Four

Indicator Number	DO/IR: Results Statement	Indicators	Unit	Baseline Value	LOP Total Expected
<i>a</i>	<i>b</i>	<i>c</i>	<i>e</i>	<i>g</i>	<i>H</i>
4	IR I: Strengthened GOL capacity to implement plans for rural and renewable energy <i>Sub IR 1.1: Improved MLME technical and managerial capacity to implement plans for rural electrification</i>	Number of policy reforms/laws/regulation and administrative procedures drafted and presented for public/stakeholder consultation to enhance sector governance and/or facilitate private sector participation and competitive markets as a result of USG assistance	Number	0	2
5	IR I: Strengthened GOL capacity to implement plans for rural and renewable energy <i>Sub IR 1.1: Improved MLME technical and managerial capacity to implement plans for rural electrification</i>	Number of government officials trained in human resources, energy policy and regulation and other related practices	Number	0	43
6	IR I: Strengthened GOL capacity to implement plans for rural and renewable energy <i>Sub IR 1.2: Action plan for a new ERB developed.</i>	ERB action plan fully developed	Y/N	N	Y

C. POTENTIAL CHALLENGES AND MITIGATION STRATEGIES

Objective 1: Example Potential Challenges	Example Mitigation Strategies
Provide training that remains relevant, even as institutional circumstances change	Focus on development of analytic and problem-solving skills and processes, not just the transfer of technical knowledge
Provision of training that is either forgotten by recipient or does not provide timely, pertinent information	Provide training according to a skills acquisition timetable for each position description. As part of the training curriculum, detailed documentation will be developed and made available to the trainees as a means of refreshing the information provided
Conflict between agencies	Focus on clarity in the division of roles
Lack of REFUND funding	Develop operating guidelines that meet the financial/technical needs of international donors and provide the basis for future fundraising
Failure to obtain buy-in from the necessary stakeholders	Engage stakeholders at all stages of RREA/Energy Law/ERB Action Plan development and implementation
Lack of institutional knowledge to transfer training to new staff members	Institutionalize training programs within RREA for educational development of new employees
Uncertain political and institutional environment, weak utilities, power deficits, and economic instability in Liberia	The ERB action plan will layout the steps needed to develop and implement an effective ERB in the country, based on the successful experiences of other countries in Africa and elsewhere, but MLME may not adopt an independent ERB under a new Energy Law

4. OBJECTIVE TWO:

ESTABLISH COMMERCIALY-VIABLE PILOT PLANTS THAT PROVIDE RENEWABLE ENERGY SERVICES TO POPULATION CENTERS IN BONG, LOFA, AND NIMBA COUNTIES.

Team Leader: COP

Supporting Team Members: DCOP; Construction and Engineering Manager; Renewable Energy Engineer; Community Outreach Officer; M&E Specialist; Electrical Engineer; Hydropower Technical Team; Biomass Technical Team; various short-term technical assistance (STTA) provided by LESSP, ESG, and Green Consultancy Inc.

Collaborating partners: MLME; RREA; L-EPA; LEC; Cooperative Development Agency (CDA), Bong, Lofa and Nimba County local authorities; Cuttington University; Phebe Hospital Kpakpormein Farmer's Cooperative Sorlumba Community Electric Cooperative, Gbarnway Electric Cooperative; Suakoko District Community; UNIDO; Development Credit Authority(DCA)/USAID; International Bank of Liberia; University of Liberia, Stella Maris Polytechnic, USAID's Excellence in Higher Education for Liberian Development (EHELD) Project; USAID's FED Project; Booker Washington Institute (BWI), USAID's The Liberia Investing for Business Expansions Program (IBEX) Program, EcoPower Liberia Ltd.; All Power Labs, the Engineering Society of Liberia (ESOL) USAID's Vocational Training and Education for Clean Energy (VOCTEC)Project; and NRECA International Ltd.

Year Four Deliverables: I. Sorlumba Community Biomass Electricity Pilot Project (SBEP): (1) In operation (September 2014); II. Mein River Mini Hydropower Pilot Project (MRMHPP): (1) Mein River Power Company initial establishment and supported; (2) Power Plant 40% complete; III. Kwendin Community Biomass Pilot Power Project (KBPP): (1) In operation (September 2014); IV Gbarnway Community Stand Alone Solar Pilot Power System (1) In operation (September 2014);

All LESSP Pilot Projects with USAID IEE, EMMPs and EA MEO and BEO Clearance, L-EPA Permits and EMMPs in hand by March 2014

Other Milestones: Implementation of CBO Training Plan (October 2013 – August 2014);

A. OVERVIEW

This objective's centerpiece is the establishment of commercially-viable pilot renewable energy projects in communities in Bong, Nimba, and Lofa counties to demonstrate economic and technical viability and encourage replication. The majority of Year Four LESSP activities will occur under Objective Two. All pilot subprojects will be constructed, necessary equipment will be procured, and community and business members will be trained. In total, four renewable energy pilot subprojects will be completed with a total installed capacity of 1,685 kW.

A crucial focal area for technical assistance in Objective Two is the establishment of and support to village cooperatives and businesses to operate the pilot power plants on a sustainable basis. Capacity-building efforts will focus on these newly formed community operating entities with a complimentary additional task to help strengthen RE system management and O&M capabilities at select centers of higher education, to increase local expertise essential to the long-term sustainability of these systems.

The following are the tasks/subtasks associated with Objective Two:

Task # 2.1: LESSP shall establish at least two hydroelectricity power systems. One mini hydroelectricity system with a minimum output of 100 kW and maximum 5 MW, and one micro hydroelectricity system with a maximum output of 100 kW will be established.

Task # 2.2: LESSP shall establish at least two biomass-powered electricity systems.

Task # 2.3: If funds allow, LESSP shall produce two additional power systems using any of the following technologies: solar, biofuels, wave, geothermal or wind.

Task # 2.4: LESSP shall develop a program that will establish community-based organizations and/or assist local businesses operate and manage LESSP power systems.

Sub-task # 2.4.1: LESSP shall assess and create a database of organizations involved with community and cooperative development in target areas.

Sub-task # 2.4.2: LESSP shall provide training and material support (e.g. business plan development, accounting training and software, equipment, and equipment maintenance training) for cooperatives and/or businesses operating power systems.

Sub-task # 2.4.3: LESSP shall provide short-term technical assistance to strengthen centers of higher education (e.g. vocational education schools, universities, colleges) in the science and engineering of renewable energy technologies. LESSP shall also update curricula at vocational schools and other centers of higher education to enhance the program's objectives and results.

Sub-task # 2.4.4: LESSP shall pursue a PPP strategy, which may include a GDA, with traditional and non-traditional resource partners (companies, foundations etc.) to leverage USAID funds in expanding the delivery of renewable energy.

Anticipated Pilot Project and Main Objective Two Results During Life of the Project:

- One hydroelectric plant of 1,000 kW will be constructed, instead of two, in accordance with the September 2013 contract modification.
- Two biomass plants will be constructed: one biomass gasifying power generation project and one biomass straight vegetable oil (SVO) power generation project.
- One stand-alone Solar PV system will be constructed to power a community.
- Liberian human resources in the renewable energy sector will be strengthened, laying the foundation for rapid future growth with private sector investments in renewable energy technology. In addition, each rural power system will have community and/or private sector management and an agreed upon internal cost-recovery program.
- By the end of Year Four, access to electricity outside of Monrovia will increase from 2% to at least 10% in target geographical areas.
- Technical capacities of centers of higher education in science, engineering, and renewable energy technologies will be strengthened.

B. YEAR FOUR ACTIVITIES, RESULTS, DELIVERABLES

Several key events are planned in Year Four. These range from construction services procurement, contracting for services, construction, on the job training in construction management and contract administration, engineer and contractor technical training sessions, ground breaking and ribbon-cutting ceremonies, and completed facility handovers. All are focused on the successful implementation of the pilot subprojects construction and initial operations.

Compliance with USAID and GOL Rules and Regulations

- LESSP will ensure construction procurement compliance with USAID regulations (FAR Part 36 and 52, and applicable ADS and CFR citations), applicable GOL rules and regulations, *FIDIC* forms of contract, and USG and GOL environmental compliance for the construction and initial operations for the four pilot projects.
- The L-EPA permit for BWI and Gbarnway will be completed in February, 2014.

Training Activities

- Community Based Organization (CBO – Sorlumba, Kwendin, Gbarnway) and Electricity Company (Mein River) Training: To ensure that these community pilot projects are both sustainable and replicable once donor support ends, LESSP will carry out five types of community training:
 - Business, Customer Service, Tariff Setting and Billing;
 - Operations and Maintenance;
 - Safety;
 - Environmental; and
 - Legal

At least 1,904 community residents and cooperative staff will be trained in the proper use, management, and operation of the LESSP electricity facilities and projects. A total of 14 training modules are planned for implementation during 2014. Annex IV presents a summary of the LESSP 2014 Cooperative and Company training plan and the details for each one of the training modules/activities. LESSP will carry out some of this training in-house, as well as utilizing GOL staff and agencies, and subcontract private sector firms.

- Strengthening Higher Education Institutes (HEIs): As a result of the strong partnerships developed by LESSP with academia and government, implementation of the training plan will be in collaboration with CDA, RREA, BWI, GreenCons, LEC, and L-EPA. LESSP will use its existing MOUs with BWI, EHELD, and Stella Maria Polytechnic to maintain contact with engineering students, provide occasional lectures, field trips, and to offer training opportunities and small workshops from time to time, when the possibility to do makes sense under the LESSP. LESSP will also work with these entities to develop RE curricula, as agreed to and outline in MOUs.
- On-the-Job (OJT) Training: LESSP will continue to provide OJT to the local engineers and contractors, with whom we work and who will construct the four pilot subprojects and others with whom the project has developed relationships over the past year. Subjects will cover areas of construction management, including: unit rate analysis, responding to requests for proposals (RFPs), QA/QC planning, health and safety planning, and business management.
 - In-House LESSP Liberian Intern Engineer Training: LESSP will continue to train its six University of Liberia (UL) and Stella Maria Polytechnic interns, hired to serve as full-time site inspectors (4) and office engineers (2) for all construction sites and activities. These students are from the electrical and civil engineering programs at UL and SMP. They will be trained in areas of technical drawings and specifications management, site supervision, contract administration, health and safety, and environmental management. This

training and work will provide engineering students with one year of real construction experience on RE infrastructure.

Monitoring, Evaluation, and Communication

- Monitoring and Evaluation – USAID Performance Indicator Database System (PIDS)/LESSP PMP: Objective Two pilot project work and training is quantitatively and qualitatively monitored under the USAID PIDS and the project PMP on a quarterly and semi-annual basis. In Year Four, the project will also produce its end of project evaluation report.
- Quality Assurance (QA)/Quality Control (QC): LESSP has an approved QA/QC Plan and uses it to check engineering design, contract, and document work. We will also use the plan to oversee construction subcontractors and actively monitor all aspects of subcontracted construction work, including financial and schedule progress and quality.
- Schedule Control: All LESSP pilot construction projects have estimated timelines and Gantt charts for procurement, QC, contract award, construction, and hand over. For a high-level construction schedule, see Annex III. By month and within each quarterly report, this schedule will be updated along with explanations of any changes and/or deviations from the projected schedule.
- Paperless Construction Management: The LESSP on-site and QC construction management program will operate using iPads. All daily and periodic forms will be submitted in File Maker Pro. Reporting will be conducted electronically, on-site. Daily reports will be uploaded to the LESSP Main Office and in real time to the LESSP File Maker Pro database. This will result in real time construction project and program data updates and give LESSP the ability see up to date construction

progress and issues as they occur in the field. This will also allow LESSP to produce monthly project construction reports that compile this daily data electronically. Another advantage of this system is that data accuracy will be 100%, as there will be no need for field data reduction for notes and note books.

- Monthly Construction Reporting: Each subproject shall be reported upon monthly to USAID and selected GOL agencies in terms of:
 - Event Reporting
 - Ground Breaking and Openings
 - VIP Inspections
 - Punch List and Final Inspection
 - Formal Handover
 - Schedule Control
 - Budget Control
 - Physical Progress
 - Safety Report
 - Issues and Solutions
 - Materials and Equipment
 - Labor and Jobs Created On Site
 - Documents and Photographs

- Reporting on Cooperative Staff, Engineer, Contractor, and User/Beneficiary Training: LESSP will ensure all data is entered into the USAID TraiNet system, as required and as monitored by LMEP.

Task # 2.1: Hydropower Systems

The main activity for Year Four is completing the procurement process for the 1,000 kW Mein River Mini Hydropower Pilot Project and to initiate and carry-out project construction. The main activities, besides procurement of construction services, will be implementing quality control and health and safety plans for construction management and activities, formalizing agreements and management plans with the local communities (three cooperatives), and the final establishment of the Mein River Power Company.

The Mein River project will be broken into two subproject parts, PP02 and PP05:

- The Mein River Pilot Project Electro-Mechanical and Civil Work (PP02);
- The Mein River Pilot Project Transmission /Distribution System Work (PP05)

a) Year Four Results/Deliverables

- For both Mein River subproject components:
 - Completed construction services procurement activity for two subproject components: (1) Electromechanical and civil works; and (2) Transmission and Distribution works
 - Contract signing

- Ground breaking ceremony
- Preconstruction conference
- 30% constructed by end of Project (October 2014)

Task # 2.2: Biomass Systems

There are two LESSP subprojects:

- Sorlumba Biomass Electricity Community Pilot Project (PP01)
- Kwendin Biomass Electricity Pilot Project (PP03)

The main activities, in addition to the procurement of construction services, will be implementing quality control and health and safety plans for construction management activities, formalizing Cooperative agreements and management plans with the local communities, and the final establishment of the Mein River Power Company. Procurement processes, mobilization, and construction are expected to be completed by September 2014.

a) Year Four Results/Deliverables

For both subprojects:

- Procurement process for construction services completed
- Contract signing
- Ground breaking ceremony
- Preconstruction conference
- Final Inspection
- 100% constructed by end of Project (October 2014)
- Formal handover (1) from the construction contractor to LESSP; (2) from LESSP to USAID; and (3) from USAID to the Cooperative

Task # 2.3: Additional Power Systems

This consists of the: 15 kW Gbarway Community Solar Electricity Pilot Project.

The main activities, in addition to the procurement of construction services, will be implementing quality control and health and safety plans for construction management activities, formalizing Cooperative agreements and management plans with the local community, and the existing electricity cooperatives. Procurement processes, mobilization, and construction are expected to be completed by September 2014.

a) Year Four Results/Deliverables

- Procurement process for construction services completed
- Contract signing
- Ground breaking ceremony
- Preconstruction conference

- Final Inspection
- 100% constructed by end of Project (October 2014)
- Formal handover (1) from the construction contractor to LESSP; (2) from LESSP to USAID; and (3) from USAID to the Cooperative

Task # 2.4: Power System Operators (CBOs, Businesses, Institutions, Higher Education Institutes)

LESSP will continue outreach and training to the pilot project site communities, as per the Memorandums of Understanding (MOUs)/Agreements that stipulate clear roles and responsibilities in the full implementation of the pilot projects. The pilot projects in Kwendin, Sorlumba, and Gbarnway will be operated, maintained, managed and owned by the respective local electricity cooperatives that were formed under LESSP for this purpose. LESSP will continue to build their capacity in Year Four.

Sub-task # 2.4.2: Training and Material Support for cooperatives and/or businesses operating power systems

In Year Four, LESSP will provide a comprehensive package of training to build and strengthen local capacity to ensure sustainable operation and maintenance of LESSP renewable energy subprojects. LESSP will implement the training plan presented in Annex IV. Partnerships between CDA, Greencons, BWI, RREA, and LEC will be used for cooperative training.

A main priority for LESSP is safety and proper use of electricity. Several activities have been designed to target a large number of community members with special attention to women and youth. End users will also learn how to effectively use and conserve electricity within the home. Among the concerns to be addressed are the type and number of lights and appliances that can be utilized at once within the range of wattage reaching each household; the use of compact fluorescent lamps (CFLs), instead of incandescent light bulbs; and basic electrical safety.

In early May 2014, eight technicians from the targeted communities will receive a two-week line man training provided by LEC and LESSP. Classroom and field work are part of such capacity building activities. Also in May 2014, the electricity cooperative project managers and two community mobilizers from each community will start receiving management and computer training. These types of workshops will be conducted at several stages through August 2014.

For the operations of the power plants, technicians will attend courses at BWI to receive the necessary training for the biomass power generation units. Training in situ will also take place in the communities during the installation, start up, and commissioning of the systems.

Within the Gbarway construction contract, LESSP will provide training to end users and cooperative technicians at the completion of the installation of each individual house system. This training will occur over the course of the projected four months of construction of the Gbarway system.

Sub-task # 2.4.3: Short-term technical assistance to strengthen centers of higher education

In Year Four, LESSP will continue providing technical assistance to Higher Education Institutions. LESSP will:

- Advise EHEDL on the implementation of the RE curricula, developed by LESSP in Year Two and adopted/approved in September 2012 for the electrical engineering curricula of the University of Liberia;
- Provide support to EHEDL, as requested, for the monitoring of the internships of four UL engineering students, currently working as site inspectors on the LESSP subprojects;
- Provide seminars, as requested, on construction and RE technologies at the UL College of Science and Technology for continued dissemination and better understanding of such technologies in Liberia;
- Provide intensive engineering OJT for engineering students from Stella Maris Polytechnic and UL during construction stage of the project;
- Finalize the RE curricula at BWI with a focus on biomass energy; and
- Create new technical capacity on biomass energy. Additional ten BWI students (a second group of Biomass Brothers) will master the operation of biomass gasifiers and lister engines.

Table 3: Indicators to be met at the end of Year Four

Indicator Number	DO/IR: Results Statement	Indicators	Unit	Baseline Value	LOP Total Expected
<i>a</i>	<i>b</i>	<i>c</i>	<i>e</i>	<i>g</i>	<i>h</i>
1	LESSP Goal: A Liberian energy sector with strengthened capacity to promote rapid, sustained and broad based growth	Capacity constructed or rehabilitated as a result of USG assistance	kW	0	1,709
2	LESSP Goal: A Liberian energy sector with strengthened capacity to promote rapid, sustained and broad based growth	Total public and private dollars leveraged by USG for energy infrastructure projects	Million Dollars	\$0	\$3.05

Indicator Number	DO/IR: Results Statement	Indicators	Unit	Baseline Value	LOP Total Expected
7	IR 1: Strengthened GOL capacity to implement plans for rural and renewable energy <i>Sub IR 1.3: Technical capacities of centers of higher education in science, engineering and renewable energy technologies strengthened.</i>	Number of centers of higher education and vocational education strengthened with curricula in renewable energy disciplines	Number	0	3
8	IR 2: Increased access to sustainable and affordable electricity for rural populations <i>Sub IR 2.1: Commercially viable pilot plants in Bong, Nimba & Lofa counties</i>	Number of people in targeted load centers accessing modern energy services as a result of USG assistance	Number	0	7,133
9	IR 2: Increased access to sustainable and affordable electricity for rural populations <i>Sub IR 2.1: Commercially viable power plants in Bong, Nimba and Lofa counties established</i>	Number of pilot hydro, biomass or alternative renewable energy systems built or renovated	Number	0	5
10	IR 2: Increased access to sustainable and affordable electricity for rural populations <i>Sub IR 2.2: Community based organizations and businesses to operate pilot projects supported</i>	Number of community members trained in construction, maintenance or management of new power systems	Number	0	1,280
11	IR 2: Increased access to sustainable and affordable electricity for rural populations Sub IR 2.2: Community based organizations and businesses to operate pilot projects supported	Number of community-based management entities established and trained	Number	0	6

C. POTENTIAL CHALLENGES AND MITIGATION STRATEGIES

Objective 2. Potential Challenges	Mitigation Strategies
Increase in project cost due to longer access road	The EPA mandated a five km long access road, which would pass through numerous gullies and require substantial cost for construction. This would increase the financing gap in the project. Discussions were held with the EPA and a shorter access road was approved by EPA.
Lack of local engineering construction firms to undertake civil construction components of biomass plants	LESSP will explore the regional engineering construction firms with Liberian counterparts for the implementation of civil construction work.
Building local technical capacity to manage and operate renewable energy systems	Provide support to the local communities during the first few months of the plant operation. Provide technical

training to the employees by the equipment and machinery vendors as part of the procurement of the power system.

Ensuring commercial operation

- Develop maximum private sector participation; support preparation of strong business plans and strategies to implement them; develop capable technical manpower and service providers;
 - Develop capable technical and managerial manpower program for the owners/employees of the power system. Assist with the development of a reliable tariff collection system and monitor the operation costs closely.
 - Assist with the establishment of systems to avert theft and waste.
 - Work with stakeholders to ensure that tariffs reflect the actual cost of generation.
-

5 OBJECTIVE THREE:

COLLABORATE WITH OTHER INTERNATIONAL DONORS FOR THE EXPANSION OF MONROVIA'S POWER GENERATION, TRANSMISSION, & DISTRIBUTION NETWORK.

Team Leader:	COP
Supporting Team Members:	DCOP; Construction Engineer; Electrical Engineer; Civil Engineer; Financial/Procurement Specialist
Collaborating partners:	Liberia Electricity Corporation, Ministry of Lands, Mines, and Energy, Rural and Renewable Energy Agency, Booker Washington Institute, WB
Year Four Deliverables:	System for LEC: (1) Bidding documents; (2) Equipment and materials for a PV on-grid system and extension of the LEC transmission and distribution network to connect the UL, Fendell campus.

A. OVERVIEW

Work for Objective Three was put on hold in December 2011. Following the recommendations of the Mid-Term Evaluation and the subsequent September 2013 Contract Modification, the Objective Three scopes of work have been adjusted as described in LESSP Activity Map.

September 2013 Prime Contract Modification, Objective Three Changes

Original: Objective Three: Collaborate with other international donors for the expansion of Monrovia's power distribution network.

Modification: Objective Three: Collaborate with other international donors for the expansion of Monrovia's power generation, transmission, and distribution network.

By May 2013, two detailed concept studies addressing the proposed subprojects were completed and submitted to USAID: (1) Utility Interconnected 1.0 MW Solar Photovoltaic Power System; and (2) Medium Voltage Distribution Line Extension from Paynesville to UL Fendell Campus, Monrovia.

The following tasks, associated with Objective Three, remain unchanged from original contract:

Task 3.1: The Contractor shall manage a fund for the purchase of electricity distribution materials (e.g. meters, wire, transformers) to connect low and middle-income customers to the Monrovia electricity grid.

Sub-task # 3.1.1: The Contractor shall work with the contractor of a five year management contract (MC) for the LEC. The MC contractor will be responsible for establishing the technical specifications, completing the subcontracts for the procurement of materials, installing the materials, overseeing quality control for the expansion of the distribution network.

Sub-task # 3.1.2: The Contractor will release funds for the procurement of distribution equipment to the MC contractor based upon the successful completion of the subcontracts and proof of acceptance of all subcontract deliverables.

The 2013 Modification included the addition of the following Sub-task:

Sub-task # 3.1.3: The Contractor shall work closely with the MC Contractor to study, design, and construct a PV power generation system for the LEC.

The two USAID-requested subprojects, as per the September 2013 Contract Modification, are:

1. Procurement of equipment and materials for approximate 500 kW to 1 MW on-grid photovoltaic generation system for LEC in Monrovia; and
2. Procurement of equipment and materials for extension of LEC T&D network to connect the University of Liberia (UL, Fendell Campus).

Proposed 2014 Work Plan

As directed by USAID, work with LEC and MLME to provide the materials for the Paynesville to UL Fendell Campus.

B. YEAR FOUR ACTIVITIES, RESULTS, DELIVERABLES

The anticipated results of Objective Three are: “In Monrovia and environs, the MC will be supported to:

1. Work with LEC to procure materials and equipment for the MV distribution line from Paynesville Red light to the UL Fendell Campus. This LESSP procurement project will provide reliable source of energy to the higher education facility and improve living and learning conditions to students. Expansion of the grid will also enable the LEC to expand their base by adding new customers.
2. Procure materials and equipment and construct a 0.5 MW solar photovoltaic power generation facility to be located at some alternative LEC site in Monrovia. The system should be synchronized to the existing LEC electrical network extension. The PV system will not include batteries; it will only provide electricity during daylight hours.

Proposed Objective Three Deliverables are:

1. Material procurement for Monrovia Solar Photovoltaic Power Project at a location yet to be determined; and
2. Material procurement for Medium Voltage Electrical Distribution Line Extension from Paynesville to UL Fendell Campus.

Objective These activities will range from procurement, subcontract management, assistance with construction management and provision of training to LEC on compliance with USAID procurement regulations.

General Activities:

- LESSP will obtain the approval from LEC for the technical specifications and the Bill of Quantities (BOQ) for the project and will then prepare the procurement package.
- LESSP will finalize design of the Solar PV power plant.
- LESSP will release RFPs for Solar Project and MV line project.
- LESSP will assist the LEC with the construction of the Solar PV system
- LESSP will manage funds for the solar power system
- LESSP will train LEC on compliance with USAID rules for procurement encouraging competition, transparency, high quality and standardization.

Compliance with USAID Rules and regulation:

- LESSP will ensure full compliance with USAID regulations, GOL rules and regulations, and environmental compliance for the construction of the solar and MV line projects.
- EPA permit will be completed.

Monitoring, Evaluation, and Communication:

Objective 3 pilot project work and training is quantitatively and qualitatively monitored under the USAID PID and the project PMP on a quarterly and semi-annual basis.

- **Quality Assurance / Quality Control:** LESSP through its approved QA/QC Plan will check all engineering design, procurement, contract, and document work. LESSP will also use Home office staff to check all equipment and material procurements. LESSP will use the following responsible staff to manage and oversee all procurement, construction, installation, commissioning and training.

Chief Engineer
 PV Engineer
 Chief Construction Engineer
 Project Manager/Engineer
 Procurement Manager

- **Schedule Control:** All LESSP Component Three procurement has estimated timelines and Gantt charts that include QC, engineering, procurement document preparation, contract award and hand over. For each month and for each quarterly report, this schedule will be updated and submitted with the quarterly LESSP report along with explanations of any changes and/or deviations from the projected schedule.

Table 4: Indicators to be met at the end of Year Four

Indicator Number	DO/IR: Results Statement	Indicators	Unit	Baseline Value	LOP Total Expected
<i>a</i>	<i>B</i>	<i>c</i>	<i>e</i>	<i>g</i>	<i>h</i>
3	LESSP Goal: A Liberian energy sector with strengthened capacity to promote rapid, sustained and broad based growth	The Liberia Electricity Corporation (LEC) procurement system and financial policies and procedures compliant with USAID standards.	Y/N	N	Y

Indicator Number	DO/IR: Results Statement	Indicators	Unit	Baseline Value	LOP Total Expected
<i>a</i>	<i>B</i>	<i>c</i>	<i>e</i>	<i>g</i>	<i>h</i>
13	IR 3: Increased access to sustainable and affordable electricity for urban populations through the expansion of the Monrovia power grid <i>Sub IR 3.2: Increased quantity (MW) of operational electric generation capacity through LESSP actions</i>	Quantity (MW) of operational electric generation capacity provided through LESSP-funded LEC sub contracts.	Number	0	0.5

C. POTENTIAL CHALLENGES AND MITIGATION STRATEGIES

Table 5:

Objective 3. Potential challenge	Mitigation Strategy
Timely construction	Provide a site inspector that can monitor and report progress
The time remaining for the LESSP project is not enough to monitor the outcomes and number of beneficiaries of the two procurement projects	LEC shall report the number of connections serviced by the MV Line project

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