

Draft – For Discussion Only

Draft (revised June 10, 2007)

**East Asia and Pacific Region Gender Program**

# **Making Infrastructure projects responsive to the needs of women in rural and remote areas: Access to rural electrification in Lao PDR**

Lao PDR Country Office



**Draft for Discussion Purposes Only**

## ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
AFMS	Accounting and Financial Management System
APB	Agricultural Promotion Bank
BAS	Billing and Accounting System
BO	Branch Office
BOL	Bank of Laos
CBS	Customer Billing System
DOE	Department of Electricity
EdL	Electricite du Lao
ECI	Electricity Enterprise for Construction and Installation
FMR	Financial Monitoring Reports
IDA	International Development Association
IFC	International Finance Corporation
LV	Low Voltage
LVCA	Lao Village Credit Association
LWU	Lao Womens Union
MEM	Ministry of Energy and Mines
MMPS	Materials Management and Procurement System
MV	Medium Voltage
OBA	Output Based Aid
PDEM	Provincial Department of Energy and Mines
RED	Rural Electrification Division of DOE/MEM
REP	Rural Electrification Program
RE APL	Rural Electrification Adjustable Program Loan
RMFC	Rural Micro Finance Committee
SPRE	Southern Provincial Rural Electrification Project

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# **1 Background and Introduction**

This report constitutes the first deliverable under the World Bank/Vientiane Country Office Terms of Reference entitled “Making infrastructure projects responsive to the needs of women in rural and remote areas: Access to rural electrification in Lao PDR”.<sup>1</sup> Per the TOR, this document describes the detailed work plan (Section 3), in particular the plan for field visits (Section 4), includes a detailed outline of the Final Report (Section 5) and describes the market structure of electricity installation companies and relevant regulatory considerations (Section 3). Section 2 includes additional background information on rural electrification in Lao PDR and a consideration of some of the issues affecting increased access to the electricity grid for low-income rural households.

## **1.1 Objectives**

The overall purpose of the work described here is to gain a thorough understanding of the market structure, regulatory considerations, and functional requirements of a household connection and indoor wiring assistance program targeted to low-income rural households. These poor households tend not to connect to the grid because of initial cost hurdles before they can access the considerable livelihood and income-producing benefits from grid electrification. The ultimate deliverable of this activity will be detailed recommendations for institutional and implementing arrangements that enable effective use (and prompt repayment) of the funds earmarked by EdL to the support program. The sector or project outcome will be higher grid connection rates by low-income households within the ongoing Rural Electrification APL 1 project.

Specific objectives described in the Energy Sector Consultant’s TOR include:

- Review the market structure for house wiring installations in each of the seven southern provinces covered by the REP;
- Provide an overview of the regulatory framework in the energy sector in terms of technical standards and licensing of installation companies;
- Review the regulatory framework in the financial sector relevant to credit services provided by non-banking institutions;
- Prepare a fund structure proposal including procedures to execute, recycle, monitor and report on the implementation of the financial support for connection charges.

## **1.2 Importance of Gender and Rural Electrification in Laos**

This activity is funded by the East Asia and Pacific Region Gender Program under its FY07-08 work program. The work program is in direct response to a 2005 regional review which identified improved access to infrastructure for rural women and additional

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<sup>1</sup> May 2007

support for business women, female entrepreneurs, and informal sector workers as priority areas where donors such as the World Bank could support governments.

The work program notes that although electricity connection rates among rural households have jumped from 16% in 1995 to almost 50% by end-2006, the poorest households (about 20-40% of the total) often decide not to connect when the grid reaches their village. Focus groups and expert interviews confirm that the connection fee, which includes line-drop, meter, and indoor wiring, is the most important barrier to grid connection by poor households.<sup>2</sup> This despite survey research indicating extensive benefits of electrification to women, including reduction in time required for tedious tasks such as collecting water (an electric pump is on the priority list for purchase in case of electrification), increased scope of evening activities due to high-quality electric light (activities such as basket making, knitting, weaving, fish net repair, reading, and of course watching TV), greater flexibility in organizing household activities as daylight is no longer a constraint, enhanced security, and the potential for undertaking income-producing activities such as handicrafts.

Household electricity connections have also been proven to help narrow long-standing gender gaps in rural Lao PDR. Literacy has generally been lower for women than for men, but the literacy gap has been found to be smaller in electrified villages.<sup>3</sup> Similarly, the level of primary school attendance for girls is lower than that for boys in both electrified and non-electrified villages. However, this difference almost disappears for secondary and vocational school in electrified villages.

Research performed in rural Lao PDR suggests that the social impacts and benefits of electrification for lower-income households, including positive effects on gender gaps, is expected to be not only large but larger than for rural electrification projects elsewhere. The 2004 DECON survey of rural households showed that grid electricity has been used not just for incremental improvements in quality and quantity of lighting, but for a range of livelihood-improving and income-producing appliances, including not just TV sets but water pumps, fans, refrigerators, and rice cookers.

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<sup>2</sup> Typical connection fees range from 550,000 - 1,300,000 Kips (US\$55-130), depending on the distance for line drop and size of home for house-wiring. Typical connection costs for basic services including two lights and one outlet are in the order of US\$55-70.

<sup>3</sup> *Evaluation of Rural Electrification: Socio-Economic Survey and Establishment of Database for Rural Electrification Planning in Lao PDR*, Final Report, November 2004. DECON Systems-Europe. The DECON study noted there are intervening factors, such as the average size of electrified villages tends to be larger and thus school access is usually better

### 1.3 The Rural Electrification APL Project

The Rural Electrification APL Project represents a significant investment in rural infrastructure in Lao PDR. This two-phase, six-year project will invest over \$70 million, financed partially by a \$25 million IDA grant, in electricity infrastructure improvements and extensions in Laos. The grid component of the first phase will provide electricity connections to about 42,000 rural households, with an off-grid component providing another 10,000 remote households with renewable energy-based electricity. In total the RE APL Program would provide access to grid electricity to 106,000 rural households in seven southern provinces (Bolikhamxay, Khammouane, Savannakhet, Salavan, Xekong, Champasak, and Attapeu) and off-grid connections to 20,000 remote households located throughout the country.

Rural household connections have grown from 16 percent in 1995 to almost 50 percent by end-2006, through a series of highly-successful projects funded by the World Bank and Asian Development Bank (ADB). The GoL has an ambitious goal of electrifying 90 percent of the country's households by 2020 (70 percent by 2010 and 80 percent by 2015); the RE APL project is central to meeting these goals.

RE APL 2 project goals for grid-connected rural electrification are shown in Table 1. This component comprises 67 subprojects covering extension of the EdL grid to some 540 villages in seven central and southern provinces. The network extension includes 1,450 km of MV lines, 1,064 km of LV lines, over 600 transformers, and meters, connections and house wiring sufficient for 42,000 households. Construction works in the seven-province RE APL project footprint are being managed by 5 EdL Branch Offices (the Salavan BO manages works in both Salavan and Xekong provinces while the Champasak BO manages works in both Champasak and Attapeu province). Each of the five construction and installation teams has a team leader and deputy team leader plus an assistant engineer, distribution engineers, a social/environmental officer, and an accounting officer.<sup>4</sup>

**Table 1: Physical Goals of RE APL 1 Project**

Province	No. of Villages	No. of Households	0.4 kV Line (m)	Transformers (set)				MV Line (m)		
				3 phase	mono	SWER*	Total	22 kV	12.7 kV	Total
Bolikhamxay	59	5,936	125,663	44	26	-	70	192,571	-	192,571
Khammouane	102	5,777	158,530	77	43	12	132	334,279	35,000	369,279
Savannakhet	155	10,788	323,640	84	64	16	164	301,397	2,740	304,137
Salavan	93	7,614	150,371	70	30	-	100	119,356	-	119,356
Xekong	24	1,490	36,268	13	12	2	27	56,296	4,714	61,010
Champasak	93	8,409	209,890	83	31	-	114	347,398	-	347,398
Attapeu	19	2,281	59,315	20	-	-	20	53,343	-	53,343
Grand Total	545	42,295	1,063,677	391	206	30	627	1,404,640	42,454	1,447,094

Note \*: single-wire-earth-return-systems.

<sup>4</sup> Project Appraisal Document: Lao PDR Rural Electrification Phase 1 Project, March 27 2006.

## **1.4 The Household Wiring Affordability Issue**

One of the lessons learned from the predecessor SPRE project was the importance of connection costs and indoor wiring costs as barriers to household connection. The household connection rate was found to have a highly negative elasticity with respect to upfront house-wiring costs, especially for lower-income households. Overcoming this “connection charge hurdle” was complicated by the presence of considerable variability in charges to connect households to the EdL grid, especially by local private wiring services companies after initial village electrification. Despite this hurdle, EdL managed to achieve and even surpass the households electrified under the Project, during the time of the extension of the Credit closing date, although the connection rates in many individual villages were below the initial targets. As a result, there remain numerous poor households in the villages electrified by SPRE that have still not yet connected to the grid. This legacy problem will be addressed by the house wiring assistance fund as well.

EdL has already taken actions to try and reduce the first-cost hurdle that connection charges and house wiring costs represent for poor households. Beginning in the latter stages of SPRE EdL created a special “basic service” category which comprises a 3/9 Amp line drop and meter, sufficient to supply two light bulbs and a single plug outlet. For households who could pass a needs test EdL would provide this basic connection at not cost. However, no provisions were made for subsidizing or financing the costs of indoor house wiring.

In recognition of the need for improved electricity access for poor households, EdL agreed during negotiations of the RE APL 1 project to prepare and implement a **House Wiring Affordability Action Plan**. The purpose of this plan was to reduce the up front payment requirements for poor rural households through providing medium-term financing (1-2 year term) for house wiring costs, as well as increasing competition and price regulation for house wiring. The Action Plan called for EdL’s Branch Offices (BOs) to work together with village representatives/committees to selection the poorest households to receive such financial support. It was projected that US\$294,000 would be required for 4,200 households (based on 10% eligibility), assuming that poor households would pay an up-front installation charge of US\$30 and EdL would finance the balance, estimated at US\$70 per household.<sup>5</sup> The Action Plan did not specify who would perform the house wiring services, but placed responsibility for coordination and inspections on EdL Branch Offices in cooperation with village chiefs and local government.

Recently, however, it has come to light that local governments are only allowing wiring services to be performed by local firms, which usually charge a much higher cost than if EdL had provided the service. This may prevent poor and even middle-income households from connecting to the grid. As demonstrated during the predecessor SPRE project, EdL has a house wiring efficiency and cost advantage during initial extension of the grid, while local firms may be more efficient and less costly once EdL’s team has

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<sup>5</sup> Second Southern Province Rural Electrification Project Phase 1 - Action Plan for House Wiring Affordability, “Tig” Voravate Tuntivate, January 2005

completed initial electrification and left the village. However, the market structure for provision of house wiring services in already-electrified areas is not well known. Clearly, there is a need for improved coordination between the rural energy sector regulator (DOE/MEM), the RE APL 1 project management, and local governments in order to maximize the number of house wiring service providers, including EdL where appropriate, and to regulate wiring services delivery by all entities in terms of charges and safety-related technical specifications.

### ***1.5 Designing a Workable and Sustainable House Wiring Assistance Program***

The House Wiring Affordability Action Plan represents an excellent basis on which to develop a detailed assistance program. However, there are numerous “knowledge gaps”, missing linkages and unknown requirements remaining before the scheme can be made workable and sustainable. The Consultant understands that the TOR for this project is really about filling in these gaps, suggesting workable linkages where needed, and understanding the nature of any unmet requirements. The Consultant puts forward There are other likely gaps and requirements which will be discussed with the World Bank team, considered in the review process, and addressed in the fund structure proposal to be included in the final report.

Figure 1 as an organizing structure for identifying gaps, linkages and requirements identified in the TOR. The somewhat deceptive complexity of implementing a house wiring assistance program is apparent from Figure 1. The program will have to span seven levels, from individual households all the way to national agencies. The program has (at least) five distinct functional requirements separate from the requirements for the rest of the RE APL 1 project – Determination of Need (eligibility), Regulation (financial services, technical, and pricing), Mobilizing Services Providers, Financing, and Financial Management. There are dozens of “connectors” that could be added between the “boxes” to depict flows of information and regulations, flows of services provided, and financial flows. This will be done as part of the preparation of a detailed fund structure proposal following completion of the field work.

Figure 1 provides structure to appreciate the individual elements of the TOR in terms of their relationship to the overall problem of designing a workable house wiring assistance scheme. For example, at the national level, the unknown requirements and missing linkages relate mostly to regulation of technical and financial elements of the program. The promulgation of technical standards and price schedules/caps by DOE/MEM is a missing linkage, while the need for approval by BOL of the provision of credit services by EdL is an unknown requirement.

Most functional requirements span several levels, which means that necessary linkages between levels need to be in place. For example, the assessment of whether EdL’s existing BAS is capable of billing and tracking customer repayments of the house wiring

credit will require understanding how and where the customer pays their bill and how the Customer Billing System is implemented at the Branch Office and local office levels.

There may be some gaps in the current House Wiring Affordability Action Plan which aren't directly addressed in the TOR. For example, the method of procurement of house wiring services and the disbursement by the House Wiring Assistance Fund to the house wiring services provider needs to be worked out. There would seem to be significant opportunities for cost-saving measures that would contribute to keeping costs as low as possible, thus easing the terms of repayment for households and reducing the capitalization required for the Fund itself.<sup>6</sup> There are other likely gaps and requirements which will be discussed with the World Bank team, considered in the review process, and addressed in the fund structure proposal to be included in the final report.

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<sup>6</sup> There is a significant Output Based Aid literature which would seem applicable here. Wiring services providers could compete for blocks of work based on the average cost of indoor house wiring or even based on the size of the monthly repayment that the household would have to pay

**Figure 1: Schematic of House Wiring Assistance Program**

	Determination of Need (Eligibility)	Regulation	Mobilizing connection & wiring services	Financing the House Wiring Assistance Program	Establishing Revolving Fund Mechanics & Maintain financial reflows
National Level		DOE/MEM promulgates standards and prices for house wiring services			BOL approves credit services aspects of the Household Wiring Assistance Revolving Fund
				EdL receives relaxation of loan/grant ratio to finance balance of indoor wiring costs for participants	EdL modifies its BAS to accommodate repayment scheme
Project Level					
Provincial Level	PDEM defines eligibility criteria for poor households & approves eligibility for participation	PDEM & EdL Provincial Office share responsibility for enforcing technical and pricing standards by house wiring service providers	EdL provides house wiring services through its subsidiary ECI or contracts with local wiring services providers approved by local government		
Subproject/EdL local office Level	EdL Branch Offices (BOs) coordinate w/ PDIH & VCs to approve list of HHHs	Random inspections of village-level installations for quality	EdL BOs coordinate installation work within each subproject	EdL BO or subproject reimburses house wiring services providers for service to participants per approved price list	EdL BO processes monthly payments & inputs to EdL's BAS
House Wiring Service Providers			Selected house wiring providers service clusters of HHHs in each village		
Village Level	VC provides list of eligible HHHs		VC coordinates installations so providers can deliver services in least-cost manner		VC assists in maintaining high repayment rates
HH Level	HH applies for assistance		HH pays minimum \$30 house wiring fee; balance is financed by EdL		HH pays balance of house wiring costs over 1.2 years in fixed term payments

## 2 Rural Electrification Issues Related to the House Wiring Affordability Program

This section very briefly reviews some pertinent literature which will find application in the work plan and the eventual design of a house wiring assistance scheme.

### 2.1 Why don't households connect?

The DECON socio-economic survey work of the Lao PDR rural electrification program clearly identified the nature and size of the first-cost hurdle to grid connection faced by poor rural households. The average cost for a grid connection is around 1,000,000 kip (US\$100) or higher, depending on the level of service selected. The cost of indoor wiring represents another US\$65-75. Most households are willing to pay only 400,000 - 800,000 kip (US\$40-80) for connection, depending on the village. However, almost all households are willing to pay for electricity consumption (10,000-20,000 Kip/month), recognizing that grid electricity is much cheaper and of much higher quality than either diesel (for lighting) or car batteries (for TV and radio). Because of the high connection costs, many households piggy-back on a neighbor's connection. The result is that their usage is limited and costs are high relative to actual cost charged by EdL, resulting in lower consumption of electricity, fewer livelihood benefits, and minimal income-producing potential.

Initial cost, however, is not the only barrier to connection, especially for houses that were built after initial village electrification. Other barriers include a cumbersome and lengthy process to apply for a connection, lengthy delays before the application is approved and an estimate of connection costs provided, and deposit of the connection costs well ahead of installation.

The broader literature identifies additional factors that retard the connection rate even after the electricity grid has been extended to a given community. In addition to financial barriers, other commonly-cited barriers include: (i) Lack of demand, stemming from poor awareness of the benefits of electrification or a perception that the power supply is too expensive or not reliable;<sup>7</sup> (ii) Institutional barriers, including commercial problems and poor governance of energy services providers; (iii) Availability of connection materials or equipment, including meters, wiring, and properly configured appliances; and (iv) Technical barriers, including lack of trained technicians, poor quality of equipment, and unfamiliarity by the consumer with proper electricity use.<sup>8</sup> The field work, especially village-level focus groups, will build a better understanding of whether the

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<sup>7</sup> In Kenya and Tanzania for example a significant number of households not connected to the grid seemed to be satisfied with a combination of other energy sources including traditional biomass, charcoal, kerosene and batteries

<sup>8</sup> *Promoting Productive Use in Rural Electrification Projects: Conceptual Framework and Operational Suggestions*, ESMAP Report, January 2007, Grayson Heffner and Erik Fernstrom

connection cost hurdle alone drives decisions by poor households whether to connect, or whether other factors or hurdles should be taken into account in the House Wiring Assistance Fund design.

## **2.2 Electrification and productive Use**

Electricity whether delivered by grid or stand-alone power generation should be seen as a vehicle to provide services, rather than an end in itself. In addition to the high-value household services including lighting and entertainment/communication, from a development standpoint the most important outcome may be activities that create income generating activities for poor and non-poor alike. Including interventions designed to promote productive uses of electricity helps stimulate demand, and thereby also improves the economic viability of the grid extension scheme.

In the context of Lao PDR there have already been many examples where access to electricity has stimulated income-generating productive use.<sup>9</sup> The DECON study identified a shift in income from agriculture towards other income sources as villages are electrified, which is ascribed directly to the appearance of new businesses enabled by electricity. The survey revealed important new business modalities since electrification, including retail shops, weaving & knitting, rice mills, small restaurants, furniture production, basket making, mechanical repair, barber shops and beauty saloons, and saw mills. Many of these income-generating activities can take place in the household setting and can be a pathway out of poverty.

Interviews conducted by DECON confirmed the satisfaction of electricity services from the viewpoint of people running small local businesses. These respondents noted that:

- Electricity plays an important positive role in our daily business activities, and allows for a gradual increase of these activities.
- Electricity allows us to continue business activities at night, and hence creates greater flexibility in work organization and enhances our business income.
- Electricity did allow us to start our own business: repair shop, rice mill, small factory and others. Without electricity, this would not have been possible.

The potential for the House Wiring Assistance Fund or related activities within RE APL 1 to stimulate productive use, especially in households and by the targeted low-income fraction of village households, should be strongly considered in the Fund design. One way to do this might be to team with other entities active in providing rural microfinance activities, such as Lao Women's Union or the Agricultural Promotional Bank, in order to piggyback extension of additional credit to purchase income-producing equipment.

## **2.3 Output based aid approaches**

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<sup>9</sup>See for example the case study taken from the SPRE off-grid component described in: *Improving Lives: World Bank Group Progress on Renewable Energy and Energy Efficiency*, Fiscal Year 2006, December 2006. Energy and Mining Sector Board, World Bank Group.

The potential importance of third party household connection and wiring services provider in delivering the services mobilized by the House Wiring Assistance Fund suggests the application of emerging models for harnessing private sector participation stemming from so-called Output Based Aid (OBA) approaches. OBA has proven particularly effective in ensuring that the benefits of investments in rural infrastructure flow to targeted populations, e.g., the poor and very poor. A growing variety of business models have been used to deliver rural electricity in such a targeted manner. The central foundation of these models is to reward private sector providers for constructing infrastructure or delivering infrastructure services in such a way as to target particular populations or minimize the subsidies involved in delivering desired outcomes. In some cases the procurement of third party services is designed to create open competition among firms where market structure allows; in other cases where providers are few private sector capacity can be encouraged through licensing, franchising, and regulation.

OBA is a highly flexible organizing principle for improving overall program efficiency and also realizing specific objectives pertinent to local market and services provider conditions. Considerable good practice experience exists for using competition among firms for providing subsidized rural electricity services to targeted populations and at minimum costs is building up, with examples from Chile, India, Thailand and Uganda.<sup>10</sup>

The applications of OBA to the House Wiring Assistance Fund apply particularly to the supply side, e.g., making sure there are enough qualified providers competing to deliver the additional services to targeted poor households. The EdL BO in conjunction with PDEM might undertake a competitive procurement household connection and wiring services providers where selection is based not only on the lowest average cost per connected household, but on other outcomes of interest such as time required to deliver the services, provision of additional credits to purchase income-producing equipment, or utilization of local labor.

The alternatives for mobilizing OBA-type approaches in the Lao PDR and RE APL 1 context will be driven by the assessment of the market structure and discussion with EdL staff at the BO level. It may be that more than one OBA-type approach may apply, depending on the degree of market concentration and other factors that vary across the seven provinces.

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<sup>10</sup> *Lessons Learned in Infrastructure Provision: Reaching the Poor*, Jonathan Halpern and Yogita Mumssen. OBA Working Paper No. 6, April 2006.

### **3 Work Plan**

#### ***3.1 Initial consultations with EdL, MIH/Department of Electricity (DOE) and others***

The purpose of this task is to gain a detailed understanding of the nature and scope of the overall national electrification strategy and the Rural Electrification Project (REP) in particular. The Consultant is already familiar with the background of rural electrification in Lao PDR and the details of the Rural Electrification APL 1 project based on previous involvement in preparing the project. The Consultant will update his understanding of current project status and issues by meeting with the EdL and DOE personnel shown in Table 2 . These meetings will serve to introduce the project to key counterparts plus engage in initial discussions on the key issues associated with establishing a household wiring and connection assistance program for poor households. Key issues include:

- Potential role of DOE as a regulator of the household wiring services industry;
- Opportunities to link together other activities related to rural energy infrastructure to gender and energy, e.g., the SME program and the REF;
- EdLs strategy in establishing its Electricity Enterprise for Construction and Installation (ECI) subsidiary;
- Other Missing linkages, knowledge gaps and unmet requirements needed to prepare a workable House Wiring Assistance Fund

**Table 2: Schedule of Initial Consultations**

Organization	Person	Title/Responsibility	Consultation Topics
DOE	Anousak Phongsavath Khamso Kouphokham Houmphone Bulyaphol	Deputy Chief, Rural Electrification Div. Deputy Chief, Electricity Mgmt Div. Director General	<ul style="list-style-type: none"> <li>• Project kick-off meeting<sup>11</sup></li> <li>• Status of GOL's Rural Electrification policy &amp; plans</li> <li>• Role of RED in providing rural energy sector regulation</li> <li>• Role of DOE as a regulator of standards and pricing of household wiring services</li> <li>• Structure of the rural electrification services industry and its effect on affordability of household connections &amp; indoor wiring</li> <li>• Potential of the SME program to provide gender-targeted advice and assistance to encourage income-producing household industry</li> <li>• Lessons learned from the Rural Electrification Fund applicable to a house wiring assistance fund for poor households</li> <li>• Obtain Lao Electric Power Technical Standards</li> </ul>
EdL	Boun Ma and Daopheng	EdL assigned counterparts	<ul style="list-style-type: none"> <li>• Project Kick-off meeting<sup>11</sup></li> <li>• Scheduling of additional meetings with EdL HQ staff and provincial &amp; subproject field visits</li> <li>• Collect information on house wiring standards</li> </ul>
EdL	Ghanhkham Douansvanh Hatsady Sisoulath	Project Manager. RE APL 1 Deputy Director General	<ul style="list-style-type: none"> <li>• Overall Project status</li> <li>• HH penetration results</li> <li>• Key personnel to meet with at subproject level</li> <li>• Status of house wiring affordability action plan</li> <li>• Structure of rural electrification installation services industry</li> <li>• DOE-EdL cooperation to regulate household wiring service industry and support income-generating activities in electrified villages</li> <li>• Information sources for conducting the legal, financial &amp; market assessment of the connection and indoor wiring services industry</li> </ul>
Poverty Committee	TBD		<ul style="list-style-type: none"> <li>• TBD</li> </ul>
Lao Women's Union	Bounsong Phouthavaong	Energia Focal Point	<ul style="list-style-type: none"> <li>• Purpose of project and discuss related activities and interest areas</li> <li>• Activities of the Energia program in Laos that might relate to the current project</li> <li>• Documentation of the gender benefits of rural electrification</li> </ul>

<sup>11</sup> Accompanied by Social Expert

### **3.2 Legal, financial and market assessment of the electricity connection and household wiring sector**

This activity will have two parts: (i) documenting the legal and financial linkages between EdL and the newly formed Electricity Enterprise for Construction and Installation (ECI); and (ii) conducting a market assessment of electricity installation companies to identify active installation companies and their market share and characterize the concentration (e.g., degree of monopoly power of providers) of the sector in each of the seven provinces comprising the Rural Electrification APL 1 project. The overall purpose of this task is to determine the presence of “new entrants” to the rural electrification sector that have affected the overall climate for delivering household connections and house wiring in an efficient, affordable, timely manner. These “new entrants” include not only ECI but also numerous local firms specializing in LV construction work including customer line drops and indoor wiring.<sup>12</sup>

#### **3.2.1 Legal and Financial Aspects of EdL-ECI Relationship**

ECI is a new entity, now incorporated within EdL, which “promotes electrification and undertakes contracts for the construction of electrical installations”.<sup>13</sup> ECI appears to have assumed a significant portion of the construction works being financed by the Rural Electrification APL 1 and other projects. In order to document the legal and financial linkages between EdL and ECI the Consultant will first confer with World Bank staff in Vientiane to determine what is already established in terms of financial and legal documentation of the EdL-ECI linkage, especially as regards the MV and village electrification components of RE APL 1 subprojects (See Table 1). The Consultant suggests that World Bank staff then participate in a meeting with senior EdL management (Deputy General Managers Sisavath Thiravong, Hatsady Sisoulath and/or Savath Phoumlavanh). The purpose of the meeting will be to determine which subprojects and subproject activities have been assigned to ECI and how certain aspects of the RE APL 1 project important to establishment of the house wiring assistance activity may be impacted by this transfer of responsibility. Key questions to be raised during this meeting include:

- For each province and for each category of physical indicators for the RE APL 1 project (See Table 1), indicate which remain the responsibility of EdL and which have been transferred to ECI;
- For each of the 67 subprojects, which have been transferred to ECI and which remain managed by EdL;
- For each of the key project personnel, indicate which have been transferred to ECI and which remain within EdL (See Table 3)
- For each subproject or subproject activity assigned to ECI, describe how progress milestones is managed, how satisfactory completion is inspected;

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<sup>12</sup> The Consultant is advised that DOE/MEM has a list of 50 firms that have been registered to provide house connection and wiring services

<sup>13</sup> <http://www.poweringprogress.org/lao-energy/policies/pss5.htm>

- Describe how subcontracting is handled between EdL and ECI. Does ECI render invoices to EdL and receive remunerations?
- What is nature of the legal arrangements between EdL and ECI. Does ECI have a “right of first refusal” for construction work subcontracted by EdL?
- When other vendors of construction services exist on a given subproject, does EdL undertake a competitive procurement?

**Table 3: Status of RE APL 1 Project Personnel**

	Remaining with EdL	Transferred to ECI
<b>Project Level</b>		
Project Manager (1)		
Deputy Project Managers (2)		
Construction Team Leaders (2)		
Installation Team Leader (2)		
Assistant Engineers (5)		
Administrative Offices (2)		
Accounting Officer (1)		
<b>Branch Office Level</b>		
MV and LV construction team leader (5)		
Distribution Engineers (10)		
Social/Environmental Officer (10)		
Warehouse Officer (5)		
Accounting Officer (5)		

### 3.2.2 Market Assessment of Electricity Installation Companies

The market assessment of electricity installation companies is a key aspect of the project. These companies are usually local and may be publicly-owned or privately-operated. The nature of any legal or financial relationship between local government and these local firms is not known. Similarly, the means by which these companies set prices and the degree to which they adhere to the technical standards promulgated by the regulations on technical standards for house wiring are also not known.<sup>14</sup> Finally, the process by which the services of these local companies are procured and by whom, and the degree of competition that exists between local electricity installation companies is not known.

The market assessment process will involve two steps. First, key individuals at DOE/MEM, EdL and elsewhere will be interviewed to determine their top-down views of the sector. A list of specific local companies that have been approved by DOE to perform premise line drops and indoor wiring services will be obtained. The Consultant will trace the development of this industry over the past ten years in Lao PDR as a succession of rural electrification projects has created new market spaces for these companies. In doing so particular attention will be paid to characterizing the experience with household connection and indoor wiring services during the predecessor SPRE project. A

<sup>14</sup> On Feb 12, 2004 DOE issued a regulation called, Lao Electric Power Technical Standards. Section 3-7 of this regulation deals specifically in the issue of technical standard for in-door wiring.

description of the procurement process that EdL (or ECI) uses for household connection and indoor wiring services at the EdL Branch Office level will be obtained. In interviewing EdL particular attention will be paid to any constraints under RE APL 1 construction placed by local or provincial governments on who is qualified to bid on or perform household connection and indoor wiring services. Of particular interest will be using the list of qualified firms provided by DOE to develop an initial estimate of the market concentration of household wiring services providers in each province. This will be done by collecting accounts paid information for each wiring services company on a subproject basis.

Also of interest is obtaining a better appreciation of the timing or sequencing of the subprojects in terms of who performs the MV, LV and household level installation activities, price variations according to different providers, and how this affects the trajectory of household connection penetration in a given villages. [Anecdotal evidence from the predecessor SPRE project suggests that if the EdL construction team undertook the household connection and indoor wiring at the inception of village connection to the MV network the cost would be considerably less than if connection and house wiring took place later when only local installers charging higher prices were available. As the time available for work in each village by the EdL construction team is limited by the need to carry on with MV network extension, there may be rationing of lower-priced connection and house wiring services with concomitant governance problems.]

Based on these interviews an initial characterization of concentration in the house wiring services industry will be developed for each of the seven provinces covered by RE APL 1.<sup>15</sup> A list of wiring services provider to interview in Bolikhamsai, Savannakhet and Champasak provinces will also be developed and used to schedule interviews for Week 2 of the mission.

### ***3.3 Assess financial regulation of credit services provided by non-banking institutions***

The proposed house wiring assistance program would position EdL as a provider of credit services to their customers. As EdL is not a bank, nor is it currently covered by financial regulators, there is some question whether this may create limitations or place additional regulatory requirements on the planned financial support program.

The formal banking sector in Lao PDR is underdeveloped, with three public banks, three joint-venture banks and eight foreign banks (as of 2005).<sup>16</sup> The formal banking system is mostly concentrated in Vientiane; only 11% of the rural population has access to formal

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<sup>15</sup> Concentration is an expression of the level of competition in an industry or market. If the fraction of total market size claimed by the top few firms in a particular industry is high then there is considerable concentration in the sector and the top few firms will have significant market power. Low concentration means market share is spread across numerous firms and there is enough competition to ensure that unwanted behavior such as price fixing does not take place.

<sup>16</sup> Asia Resource Center for Microfinance, Lao PDR Country Profile

financial institutions, and only 1% make saving deposits.<sup>17</sup> An exception is the Agricultural Promotion Bank, which has a rural branch network throughout all provinces. It is estimated that 75% of the population do not have access to formal or semi-formal financial services.

The Bank of Lao PDR (BOL) is the GOI's central bank, with licensing, supervision, and prudential regulatory powers over formal financial institutions within a two tier banking system. The central bank and commercial bank functions are separate, with policy decisions on financial regulations and deregulations made by BOL. However, financial regulation is generally underdeveloped in the country as well, as noted by IFC: "A general lack of clear accountability in the management of the financial sector, organizational weaknesses within the supervisory structure, inconsistency in application of laws and regulations, absence of real corporate governance and lack of transparency, both in the institutions under the purview of the central bank, and in the supervisory process, impact negatively on the financial sector."<sup>18</sup>

As the regulatory authority the BOL also has responsibility for credit services and microfinance. BOL has been receptive to innovation in the provision of credit services including microfinance, especially in rural areas, as evidenced by its participation and chairmanship of an inter-ministerial Rural Micro Finance Committee (RMFC). This committee was formed in 2002 to create an environment conducive to the growth of the microfinance sector. The committee recently prepared a national policy statement on rural microfinance that was supported by ADB and the World Bank and earned approval by the office of the Prime Minister. Rural microfinance policies are now being implemented on a provincial basis.

The lack of regulatory framework for microfinance is a barrier to the development of microfinance institutions that are free from government interference and thus able to set market-based interest rates. Current regulations clearly cover both microfinance institutions and credit cooperatives, including objectives, functions, the types of business they may undertake, conditions of their establishment, and capitalization requirements.<sup>19</sup>

Several credit cooperatives are well established and operating successfully in the rural context, notably the Lao Women's Union (LWU). The LWU established some 1,650 'Lao Village Credit Associations' (LVCAs) focused on women and the poor during the early-mid 1990s. These LVCAs were focused on encouraging income-producing or livelihood-improving activities (such as income-generating activities and education and training), which were facilitated with a revolving credit fund attached.

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<sup>17</sup> Rural Finance and Microfinance Development in Transition Countries in Southeast and East Asia  
Ryu Fukui and Gilberto M. Llanto, 2003. DISCUSSION PAPER SERIES NO. 2003-12,  
Philippine Institute for Development Studies

<sup>18</sup> IFC, LAO PDR Financial Sector Diagnostic, Litsamy Latsavong, Margrete Biallas, September, 2006

<sup>19</sup> Asia Resource Center for Microfinance, Lao Microfinance Country Profile.

[http://www.bwtp.org/arcmlaos/II\\_Organisations/Supporting\\_Organisations/Bank\\_of\\_Laos.htm](http://www.bwtp.org/arcmlaos/II_Organisations/Supporting_Organisations/Bank_of_Laos.htm)

Although it is unlikely that BOL or MOF would be opposed to the house wiring affordability credit scheme as proposed, it is prudent to verify this through dialogue with the relevant counterparts. Accordingly, the Consultant proposes to meet with senior staff of the Bank of Lao active in BOL's efforts to establish financial services in rural areas that are accessible to poor households.<sup>20</sup> Based on recent BOL-sponsored activities and correspondence with IFC staff in Vientiane the schedule of meetings and topics for discussion shown in Table 4 is suggested. The Consultant recommends that World Bank staff schedule the BOL meeting and accompany the Consultant. Discussions with other entities actively engaged in offering financial services to the rural poor, e.g., Agricultural Promotion Bank and Lao Women's Union, is also suggested. Contact points for these organizations as well as discussion topics are also given in Table 4. Based on this review the Consultant will make a recommendation regarding additional work to clarify the financial regulation requirements of the House Wiring Assistance Program.

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<sup>20</sup> Microfinance for the Poor in Lao PDR, National Conference Report, Vientiane, Lao PDR, December 22nd & 23rd, 2005.

**Table 4: Recommended Consultations to Determine Financial Regulatory Regime for the House Wiring Assistance Fund**

Organization	Person	Title/Responsibility	Consultation Topics
Bank of Laos	Mdme. Sengdao Boupakonekham	Director General, International Relations Dept. Tel: 856 -21 -213120, Fax: 856- 21-213580	<ul style="list-style-type: none"> <li>• BOL’s policy on credit services provision for poor households as part of a rural electrification project</li> <li>• Steps that EdL should take to gain BOL approval of the house wiring assistance fund</li> </ul>
	Mr. Leuane Vongphranakhorn	Deputy Director General, Bank and Financial Institution Supervision Department	
Agricultural Promotion Bank	Bounvong Duangdokket <sup>12</sup>	APB Manager, ADB Project on Institutional Strengthening for Rural Finance	<ul style="list-style-type: none"> <li>• APB activities in promoting rural energy</li> <li>• Regulatory issues associated with rural microfinance &amp; effect of BOL’s microfinance policy roll-out at provincial level</li> <li>• Possible participation as an alternative financial intermediary in the house wiring assistance fund</li> <li>• Alternative models (village savings funds, microfinance operations) that would encompass investment in additional income-generating electricity-using infrastructure</li> </ul>
	Phanthaboun Sayaphet,	Deputy Managing Director Tel: 856-21-212024, Fax: 856-21-213957	
Lao Women’s Union	Mrs. Sirikit	Project Manager Tel: 856-21-214034	<ul style="list-style-type: none"> <li>• Regulatory regime imposed by BOL on LWU’s LVCA program</li> <li>• Gender-rural energy linkages generally</li> <li>• Comments on the house wiring affordability scheme</li> </ul>

### **3.4 Appraising EdL's BAS for use in processing reflow payments of the house wiring assistance revolving fund**

EdL's information technology (IT) assets have been significantly enhanced through both the predecessor SPRE project and the current RE APL1 project. A computerized Billing System and an Accounting and Financial Management system (AFMS) was established, which allowed integration of financial management of EdL's Headquarters with 9 Branch Offices. A turn-key Customer Billing System (CBS) was also procured and installed under SPRE, in 2003.<sup>21</sup>

Scheduled IT improvements under RE APL 1 include: (i) integration of EdL headquarters and BOs through extending the existing BAS system to the 4 additional provinces (for a total of 13 BOs); (ii) development of a new materials management and procurement system (MMPS); and (iii) technical assistance for financial management capacity building.

These IT investments have improved EdL's ability to manage large projects and procurement activities, including internal audit capabilities and ability to generate Financial Monitoring Reports (FMRs). However, the capability of the CBS subcomponent of the BAS to accommodate a new program such as the house wiring assistance activity is not completely understood.

During the kick-off meeting with the EdL counterparts for this project (Boun Ma and Daopheng) the Consultant will identify EdL staff responsible for the BAS, including the CBS. The Consultant, with optional World Bank participation, will meet with technical staff in EdL's Customer Accounting unit to determine:

- Current status of CBS hardware and software (vendor, version, server type, functionality)
- Any customizations done since installation (e.g., programming of Payment Historical Signals to accommodate the need for aging of receivables);
- Scheduled updates or upgrades as part of the IT component of RE APL 1;
- Current capability to accommodate levelized term repayments for individual customers making payments at local EdL offices;
- Potential for additional software customization to accommodate this functionality, including cost and vendor;
- Alternatives to using the CBS system to track house wiring assistance reflow payments (e.g., side spreadsheet, other capability within the scheduled MMPS, manual tracking at the BO or local office level).

Based on the discussions with the EdL Accounting Department the Consultant will appraise the current capacity of EdL's BAS to accommodate the planned house wiring assistance program. The appraisal will include a recommended approach and estimated costs, if any, to discharge this new customer billing function.

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<sup>21</sup>Aide-Memoire, Southern Provinces Rural Electrification (SPRE) Project (Credit 3047-LA), Supervision Mission (February 3-14, 2003)

### **3.5 Calculate initial funding and annual cash flows to finance the house wiring assistance activity**

The Consultant will work with EdL to recalculate the financing to initialize the revolving fund for house wiring assistance. The Consultant will develop a simple algorithm that can be used to calculate fund initialization and annual cash flow as a function of the following factors:

- Estimated fraction of the households in the RE APL 1 subproject areas likely to be eligible for participation (5-25 percent);
- Implementation schedule of the REP.
- Average indoor wiring cost.
- Customer minimum payment
- Average repayment term
- Customer interest charges

The calculation will be provided as a simple spreadsheet that would allow EdL, DOE/MEM or World Bank managers to gauge the impact on the financing required for the house wiring assistance scheme according to both key design parameters and roll-out of the RE APL 1 project.

The Consultant notes that this spreadsheet will be similar in appearance and results to that already prepared and included in background materials provided (See Table 5).<sup>22</sup>

**Table 5: Indicative Calculation of House Wiring Assistance Revolving Fund Requirements<sup>23</sup>**

		FY08	FY09	FY10	FY11	Total
RE APL 1 percent LV completion		30%	50%	20%		100%
Household Eligibility	20%					
Eligible & Available Houses		2538	4230	1692		8459
Cost of Wiring Svcs	\$75					
Customer Contribution	\$25					
Support per HH	\$50					
Fund Requirements		\$126,885	\$211,475	\$84,590		\$422,950
Avg Repayment Term	18					
Customer Interest Charged (APR)	0%					
Reflows		42,295	155,082	169,180	56,393	422,950
Net Fund Outlays		\$84,590	\$56,393	-\$84,590	-\$56,393	\$0

<sup>22</sup> Second Southern Province Rural Electrification Project Phase 1 - Action Plan for House Wiring Affordability, “Tig” Voravate Tuntivate, January 2005

<sup>23</sup> Assumes a total of 42,295 houses are grid connected via RE APL 1 Phase 1

### **3.6 Propose an overall structure for the house wiring assistance activity**

The TOR further states that the proposal should “consider relevant alternatives in terms of location and management of the fund management as well as single-company installation versus decentralized installation where competing installation companies will be authorized to carry out house-wire installation and receive reimbursement from fund management against verified installation of eligible households.”

This task calls for preparation of an overall design for management of the financial aspects of the scheme as well as physical implementation of the assistance activity, including procurement of house wiring services, disbursement of the credits against proof of installation, and repayment of the credit by households via their EdL bill or other arrangement.

Developing such an overall structure will be guided by the overall depiction of the scheme as shown in Figure 1. The Consultant will only be able to develop a recommended overall structure upon completion of the consultations with EdL, DOE/MEM and BOL as well as the field work in Bolikhamsai, Savannakhet, and Champasak provinces.

However, the Consultant can offer some criteria which will guide the eventual recommendations on structure and responsibilities, as provided in Table 6. Although EdL appears the logical choice to undertake most of the functional requirements of the scheme<sup>24</sup> (e.g., financial intermediary, fund operator, implementation manager, installation services provider), there are alternative arrangements which might have some advantages and are worth consideration. These include other organizations active in extending credit and assisting poor rural households, including Lao Women’s Union and the Agricultural Promotion Bank. The consultations undertaken in Vientiane as well as the insights gained with the field visit will help inform which institutional arrangements appear to be superior given the requirements and objectives of the program.

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<sup>24</sup> The exception to the functional requirements which EdL can carry out is regulation

**Table 6: Determining Institutional Arrangements for the House Wiring Assistance Scheme**

Functional Requirements for the Scheme	Putative Institutional Arrangement	Criteria for Selection	Possible Alternative Arrangements
Financial Intermediary	EdL via the RE APL 1 loan and grant financing	<ul style="list-style-type: none"> <li>Existing Relationship with borrower</li> <li>Access to funds</li> </ul>	<ul style="list-style-type: none"> <li>LWU’s LVCA Program</li> <li>APB’s microfinance units</li> <li>Output based aid approaches w/ private sector</li> </ul>
Fund Operator	EdL using existing BAS and MMPS systems	<ul style="list-style-type: none"> <li>Capacity for financial management</li> <li>Capacity to disburse upon verification</li> <li>Capacity to process reflows</li> </ul>	<ul style="list-style-type: none"> <li>DOE/MEM OPS</li> <li>LWU’s LVCA program</li> <li>APB’s microfinance units</li> </ul>
Implementation Manager	EdL (or ECI) via BOs under the RE APL 1 project	<ul style="list-style-type: none"> <li>Capacity to procure house wiring services on a competitive basis</li> <li>Familiarity with local conditions</li> <li>Relationships with local government and VCs</li> <li>Inspection &amp; verification capacity</li> </ul>	<ul style="list-style-type: none"> <li>PDEM</li> <li>Outsourced program manager (ala the VOPS contractor)</li> <li>LWU or other NGO or coop</li> </ul>
Installation Services	EdL (or ECI) and local wiring services contractors	<ul style="list-style-type: none"> <li>Ability to install per technical standards at minimum cost</li> <li>Familiarity with local conditions</li> <li>Relationships with local government &amp; EdL</li> </ul>	<ul style="list-style-type: none"> <li>Provincial level concessions based on competitive selection on wiring service costs</li> </ul>
Overall regulation, including needs determination, technical standards, price controls, & financial controls	DOE/MEM + PDEM + VCs  BOL	<ul style="list-style-type: none"> <li>Statutory authority</li> </ul>	None

## **4 Field Visit Plan**

The TOR calls for a detailed description of the field visit and how it fits into the overall work plan. This section briefly describes the field visit activities planned for outside Vientiane (the consultations and discussion to be held in Vientiane are described above).

### **4.1 Summary**

The Energy Sector Consultant will be joined by a local Social Expert separately retained by the World Bank Office in Vientiane for a 7 day field visit to several southern provinces. The purpose of this field visit is to conduct a review of rural electrification project status, household connection and wiring services market conditions, non-electrified household attitudes towards barriers to connection, and other local conditions requiring consideration before recommending an overall structure and design of the house wiring assistance program. The Energy Sector Consultant will be accompanied by a Lao national with experience in rural energy issues who will provide translation services.<sup>25</sup>

### **4.2 Field Visit Objectives**

The objectives of the field visit are to: (i) consult with representatives of EdL and Department of Electricity (DOE) at the provincial level to understand the issues and requirements associated with implementing a house wiring assistance program; (ii) better understand the operational and financial linkages between EdL and its subsidiary Electricity Enterprise for Construction and Installation (ECI); (iii) discuss with EdL RE APL 1 project managers how household connection and indoor wiring installations are scheduled and service providers procured and paid; (iv) continue market assessment of the connection and indoor wiring services industry via interviews with electricity installation companies at the provincial and local level; (v) improve the estimates of market share and the degree of concentration in the house wiring services industry at the provincial level; (vi) assess how EdL's capacity at its BOs affect the overall ability of EdL's Billing and Accounting System to accommodate a rural customer installment repayment scheme; (vii) meet with provincial representatives of the LWU and APB regarding their rural microfinance activities and assess their attractiveness as alternatives to EdL for various aspects of the house wiring assistance program; and (viii) research via village-level focus groups what additional barriers or issues to grid connection might exist for poor households, especially those headed by women.

### **4.3 Data Collection Plan**

Table 7 summarizes the planned modes for data collection from all sources, including apex agencies and households. The main data collection modes will be interviews and discussions and village-level focus groups. The Energy Sector Expert field work will be coordinated with the local Social Expert where appropriate for purposes of efficiency and coverage. However, the Energy Sector Expert will be self-sufficient as he will be

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<sup>25</sup> The Consultant is currently recruiting the rural energy specialist/Lao-English translator

accompanied by a dedicated Lao translator. Interview topics and focus group formats are provided in Annex 1.

**Table 7: Field Visit Data Collection Plan**

Stakeholder group	Data collection vehicle	Approach and Sample size
Provincial connection and indoor wiring service providers, local EdL Rural Electrification project managers. Representative of LWU and APB	Interviews and discussions in three provincial capitals – Paksan (Bolikhamsai), Savannakhet and Pakse (Champasak) and additional provincial towns as specified in the inception report	Discussions with key staff
Rural Households likely to eligible for participation in the Wiring Affordability Support Program	Focus group discussions in one selected village in a RE APL 1 project area representative of each province (3 villages total)	8-10 person group in each village (3 groups total)
Village Heads	Interviews with the village head in the selected village	1 per village
Local indoor wiring services providers	Questionnaires and interviews with local indoor wiring services providers	1 per village

#### **4.4 Schedule**

The mission schedule will be very tight in order to fit in the field work in three provinces (Paksan, Savannakhet, and Pakse) and surrounding areas where the Lao Rural Electrification project is actively extending the grid.<sup>26</sup> Two days is allocated for provincial-level meetings and village-level visits and focus groups in each of three provinces (See Figure 2).

#### **4.5 Field Visit Outputs**

The outputs of the field visit portion of the mission will include:

- Understanding of the role which a household wiring support activity can play in the overall context of EdL’s Rural Electrification Project (REP), and an understanding of key issues and requirements for EdL
- Improved documentation of financial and operational linkages between EdL and the Electricity Enterprise for Construction and Installation (ECI) in the context of the RE APL 1 project
- Market assessment of EdL, ECI, and other electricity installation companies in each province, with special attention paid to market share and industry concentration in the three provinces in which the REP is most active.
- Suggestions and linkages on design of the household wiring support program as provided by rural energy experts, rural poverty experts, and women’s empowerment experts
- An analysis of microfinance operations targeting the rural poor being managed by LWU and APB

<sup>26</sup> These three provinces account for the largest amount of scheduled activity under the IDA-sponsored Rural Electrification Project

- Assessment of actions needed for EdL's Billing and Accounting System to at the BO level to accommodate the anticipated repayment scheme to be included in the household wiring assistance program

**Figure 2: Field Visit Schedule**

Rural Electrification Access for Low-Income and Women Household Heads												
Day	18-Jun	19-Jun	20-Jun	21-Jun	22-Jun	June 23-24	25-Jun	26-Jun	27-Jun	28-Jun	29-Jun	30-Jun
Bolikhamsai Provincial Meetings (ECI, EdL)												
Bolikhamsai Village Visit												
Travel to Savannakhet												
Savannakhet Provincial Meetings (ECI, EdL)												
Savannakhet Village Visits												
Champasak Provincial meetings (ECI, EdL)												
Champasak Village Visits												
Return to Vientiane												

## 5 Final Report Outline

The TOR calls for inclusion of a detailed outline for the final report to be included in the inception report. The Consultant anticipates that the Final Report for the project will closely follow this Inception Report, except for additional chapters detailing the recommendations on overall program structure and operating procedures. An indicative Final Report outline is provided in Box 1 below.

### Box 1: Indicative Final Report Outline

Background and Introduction	Study Objectives Rural Electrification & Gender in Rural Lao PDR Barriers to Household Connection by the Rural Poor
Consideration of Rural Electrification Issues in Lao PDR	Targeting the Rural Poor Stimulating Productive Use Regulating infrastructure delivery and pricing Creating competition in supply Application of output based aid Need for financial remediation Consideration of alternative providers of credit
House Wiring Assistance Fund Design	Overall design philosophy Institutional arrangements Needs Determination Governance and regulation Fund capitalization requirements RE APL 1 Coordination issues Procurement of house connection & wiring services Disbursement and financial management issues, including inspections & verification Accommodating the reflow from customer payments in EdL's BAS Monitoring outcomes & Socioeconomic evaluation

## 6 Annex 1

### 6.1 Interview Formats for Household Connection and Wiring Companies

Name			
Company			
Location (province & town)			
How long in business			
How many employees			
Business description	e.g., MV, LV construction, house & business connection, indoor wiring only)		
What geographic areas do you cover?			
Business so far under RE APL 1	HH connections		
	HH indoor wiring		
	Village transformers		
	Businesses connected or wired		
	Other (Specify)		
How are your services procured?	(competitive tender, sole source award, local concession)		
How are your prices set?	(bid per village or HH cluster, price cap or ceiling, other price schedule (specify))		
How are you compensated for your services?	(invoices to EdL BO, cash payments upon completion, other)		
Who are your main competitors?			
Can you provide a general schedule for your connection and indoor wiring services?	<b>Connection Svc</b>	<b>Cost</b>	
	Basic service (3/9 amp)		
	Larger houses (4/12)		
	Largest house (6/18)		
	<b>Wiring Service</b>	<b>Cost</b>	
	Basic service (2 lights, 1 outlet)		
	Larger house (4 lights, 2 outlets)		
Largest house			
What are the biggest barriers to gaining a 100% connection rate for villages in your area?	(connection cost, delays in gaining service, reliability, lack of familiarity w/ benefits)		
What technical standards do you refer to in your work? Are you aware of the Lao Electric Power Technical Standards			
Is there inspection of your work on completion?			
What are your ideas for helping poor households connect to the grid?			
What else can be done to get the biggest benefit from village electrification?			

## **6.2 Focus Group Format for Village-Level Discussions with Heads of Non-Electrified Households**

Village Name	
Province	
Describe focus group composition	<ul style="list-style-type: none"> <li>• Total Participants</li> <li>• Village chief present?</li> <li>• Total Heads of Households</li> <li>• Women-headed HoH</li> </ul>
Where does the village stand in terms of the electrification process	<ul style="list-style-type: none"> <li>• Not electrified but scheduled</li> <li>• Electrified recently</li> <li>• Electrified for more than a year</li> </ul>
What are the benefits of having a grid electricity connection?	<ul style="list-style-type: none"> <li>•</li> </ul>
Will you connect to the grid when it comes to your village?	
If not why not?	(too expensive, don't need it, not reliable)
How much are you able and willing to pay to get your initial connection?	1,000,000 kip 500,000 kip 250,000 kip
How much are you able and willing to pay per month for electricity, and to repay any financing of connection costs?	
How much do you spend now on other forms of energy for lighting and entertainment?	(e.g., candles and diesel lamps for lighting, car batteries for TV and radio)
What are the most important uses for electricity	(Lighting, TV/radio, water pumping, refrigerator)
Will you be able to increase your income as a result of having access to electricity?	
If so, how?	(household industry – specify, restaurant, other)
Who are you most comfortable with providing wiring services or HH connections?	(EdL, local company, local NGO (e.g., LWU))
Where is the nearest EdL office?	
Do you currently access credit or banking services?	
If so from whom	(APB, LVCA, commercial bank, other)
What community facilities do you have that will benefit from electrification?	(health clinic, school, other)
Besides electricity, what other infrastructure or services would be beneficial for poor and very poor households?	
Will electrification have any particular or special benefits for women and children, at the village or household level?	
If so, please give examples	(security, flexibility in scheduling household chores, better quality light for study or reading?)