RURAL ELECTRIFICATION AGENCY

Ministry of Energy and Mineral Development

"The Peoples Electricity Link"

RURAL ELECTRIFICATION

Strategy and Plan

2013-2022

The Government of the Republic of Uganda

Rural Electrification Strategy and Plan

Covering the Period 2013-2022

3rd July 2013

Ministry of Energy and Mineral Development

EXECUTIVE SUMMARY

This document presents the Government's Rural Electrification Strategy and Plan (RESP) for the ten-year period 2013-2022. This is the second comprehensive RESP, following the one which was published in 2001 covering the period 2001-2010 (but whose official expiry time is 2012 due to delayed implementation).

The RESP was developed in a consultative process with the rural electrification program's principal stakeholders to identify corrective measures for improving the performance of the sector, focusing on measures to accelerate electricity access while ensuring program efficiency and sustainability.

Rural electrification is an integral component of the Government's overall policy and program to promote national economic and social development and integration. Currently, less than 7% of the rural population has electricity service. This level of electrification is an impediment to the achievement of the desired transformation. The RESP 2013 – 2022, therefore, has been designed to achieve a much faster acceleration of national geographical coverage and consumer access than hitherto.

This RESP is aligned to the Government vision of universal electricity access by 2040. Its design has also taken cognizance of the UN initiative on modern energy access for all which obligates all governments to ensure the availability of clean and affordable modern energy in all homes by 2030. This includes the provision of cleaner, more efficient technologies for cooking and lighting in households.

Consequently, the **primary objective of the RESP 2013-2022** is: **"**To achieve an accelerated pace of electricity access and service penetration to meet national development goals during the planning period and beyond".

A **secondary objective** is to ensure that, progressively, the program facilitates access to all forms of modern energy services to replace kerosene lighting and other forms of traditional cooking and heating by 2030.

During this 10-year planning period, the Government's strategy is to **achieve a rural electrification access of 26%** (i.e. consumers who will be utilizing electricity in their homes, businesses or institutions) by 2022 from the current level of about 7%. The pace of acceleration anticipated in the RESP also projects access to be at 51% by 2030 and 100% by 2040. A robust enabling environment will need to be created during this period to establish the necessary springboard for achieving the ambitious goals for the years 2030 and 2040.

Applying Lessons Learned

The new strategy employs a modified approach for rural electrification development based on a coherent scheme to aggregate the market for rural electricity service expansion under a simplified set of implementing mechanisms. A decision to centralize rural electrification planning and program management underpins this new strategy, in order to reduce complexity and eliminate overlapping roles.

The new strategy focuses on orchestrating resources and stakeholders to operate in a number of scaled-up service territories for which long-term electrification service business plans shall be developed, implemented and monitored against annually-determined rural electrification investment and service connection targets.

The private sector, including electricity service providers and supporting services providers, shall continue to play important roles. However, the Government shall proactively plan and enable the program's implementation, while mitigating commercial risks and related inhibiting barriers that prevented the private sector from fulfilling its responsibilities under the previous strategy.

Importantly, the beneficiary population, as the most motivated stakeholder group in rural electrification development, will be given a more robust role in achieving the aims of this new RESP. This will involve setting local priorities, managing demand aggregation and consumer outreach and, wherever possible, managing and operating the schemes as cooperatives.

Accordingly, the impetus for rural electrification investment will be more demand-driven, relieving the private sector providers of excessive risk-taking responsibility in the scheme, which proved unworkable. It is the Government's responsibility to assume this burden, specifically the Rural Electrification Agency as the centralized authority for planning and implementing the resource requirements of the program, working with the beneficiaries and partnering private-sector actors to ensure that they are adequately supplied with the resources and competencies to implement the Government's rural electrification strategy and program plan.

Long-term program sustainability means developing internal mechanisms for financing and assuring that all other major functional requirements of rural electricity service and rural utility sustenance can, in time, be addressed independently of government support. Capital expenditures should be provided under a system of capital recovery wherein the resources are recaptured by the Rural Electrification Fund (REF) for reinvestment in the future.

RE program financing will also address the issue of customer service connections and house wiring which puts the majority of rural households beyond the economic reach of the electricity service program. The provision of financial support in this direction will help to jump-start the process of electrification-driven rural economic development.

Program Implementing Policies and Structures

Programmatic and policy adjustment measures that will be applied in carrying out the RESP 2013-2022 are summarized as follows:

1. **The Government will assume greater responsibility for planning, financing and overall management of the rural electrification sector, while the private sector plays a complementary role to that of Government.**

   In this respect, Government will absorb the major commercial and financial risk for rural electrification development and, by so doing, remove a critical obstacle to the rapid advancement of investment in the sector.

2. **RE shall be implemented on a model of scaled, multi-technology electricity service territories comprising the entire rural territory of the country.**

   This model shall be the basis for all rural electrification planning, project development and planning, electricity service concessions, financing, supervision and support. This policy is to increase the commercial viability of rural electrification investments in a shorter timeframe, paving the way for the ordered in-flows of capital financing in a rational and sequenced pattern.

3. **Planning and management for all rural electrification sector programs and investment resources will be centralized in the REA**.

   The rationale is to ensure better coordination and eschew disaggregation of rural electrification planning and implementation, which impeded scale and compromised coordination and efficient use of funding resources. REA shall be reconstituted as an autonomous entity of the Government, along with granting of sufficient policy and administrative decision-making authority to the Rural Electrification Board to guide and oversee the REA. Similarly, all rural electrification funding resources will be consolidated in the Rural Electrification Fund, under the fiduciary authority of the REB and the administrative management of the REA.

4. **Rural electrification services and infrastructure shall be managed by duly licensed non-governmental concession holders.**

   While this similar to the current scheme, there will be assistance to reduce concession holders' commercial risk in developing demand and performing their planning responsibilities. Under their concession licenses, these operators will be responsible for ensuring that service is offered widely on an "area coverage" basis to all eligible applicants in their service territories according to service territory expansion plans that are developed and regularly updated with REA's direct involvement as the basis for receiving REF financing support. Such licensing shall include, but not necessarily be limited to, privately-owned and cooperatively-owned operators under conditions that permit, but do not require, the incorporation of local electricity services commercialization agents acting in concert with the licensed operators of the distribution systems.

5. **Off-grid electrification services comprising energy service technologies not dependent on the national grid shall, preferably, be planned, offered and furnished to eligible consumers in the service territories in tandem with on-grid electrification services.**

   These include islanded community-based mini-grids and solar PV systems. The solar PV program may be implemented as REA-sanctioned projects proposed by solar PV providers or under customer aggregation schemes facilitated or owned by the on-grid service providers and directly financed by REA to improve program planning and implementation scale.

6. **Capital financing for infrastructure development for electric distribution-based investment shall be furnished under a system of long-term leasing and financing contracts with the electric distribution licensees.**

   The financing will cover both the capital cost of the distribution infrastructure construction and the major cost of consumer service connections, in order to lower the financial barrier to widespread household service connections. Off-grid photovoltaic electrification investment may be financed under a combination of REA grants and microfinance agencies lending directly to consumers or directly by REA under tripartite financing agreements with the on-grid service providers and solar PV companies.

7. **The cost of wholesale power to rural concession licensees may be discounted on a needs-test basis in order to make on-grid rural electricity service more affordable.**

   Otherwise, electricity pricing shall be determined and approved by the ERA according to the operating costs of each licensed concession holder including system operating and administrative expenses, approved capital expenditure recovery through a depreciation allowance, financing costs and/or an established rate of capital return corresponding to investments made by licensees.

8. **Investment in small distributed power generation facilities as local sources of supply will be given increased priority and enhanced support**.

   This investment has the potential to mitigate potential bottlenecks in rural electrification expansion caused by power supply limitations on the national transmission network. Under circumstances such that the central grid cannot sufficiently meet the power demand of the rural service providers, in such case special rules and regulations will be provided concerning licensing power projects and wholesale power contracting to allow rural electric service providers to purchase directly from such facilities or to engage directly in small-scale power investment for their own consumption needs.

9. **New emphasis will be given to building organizational and professional competencies through technical assistance and training.**

   This will be provided by REA working with its partnering agencies. Such support shall extend to rural service providers as to government and private sector participants in the rural electrification program.

These new policy reforms will lead the reorientation of the sector over the term of the RESP and are intended to put the nation's rural electrification program on a path to achieving electric service coverage throughout the country by the year 2040.

Linking RESP Goal Achievement to Improved Planning and Monitoring

The rural electricity access goals and milestones of the RESP are based on the long-range service territory plans and financial forecasts for the service territories, under a logical, sequential allocation of investment and capacity-building resources. The 26% rural electrification penetration rate by 2022 will be met by the following specific electricity service expansion goals:-

1. On-grid services will be expanded to provide approximately 1.28 million new service connections.
2. Off-grid services are to be increased by approximately 140,000 additional installations of solar PV systems and mini-grid distribution service connections.

This means that approximately 1.42 million new rural consumers will have access to electricity, making a total of approximately 1.9 million rural electric services (current rural access is approximately 300, 000 consumers).

Achievement toward these 10-year goals will be routinely planned and monitored under comprehensive annual rural electrification plans developed by the REA and adopted by the REB, which will consist of the aggregated service territory electrification expansion programs as a function of approving loans for both on-grid and off-grid investments, together with other elements of the overall rural electrification development program addressing service provider monitoring and support, power supply planning considerations, end-use promotion and technological improvements. These annual plans will serve as the basis for acquiring needed funding increments, identifying and remedying supply-chain constraints and bottlenecks and informing program stakeholders of progress and problems that may then be dealt with in a coherent and timely fashion so that the RESP goals are in fact accomplished.

Strategy Implementation Provisions and Financing Resources Required

The associated capital expenditure funding requirement to achieve these results is estimated to be US$920 million. Funding resources for capacity building, technical assistance and training is estimated to be US$10 million. Adding an estimated US$30 million for other costs, including meeting the supplementary financing needs of the service providers for working capital, consumer financing assistance for the customer portion of the cost of service connection fees, house-wiring and purchases of appliances and productive electricity-use equipment, and upstream development costs of a more aggressive rural power generation program puts the **global funding target for the RESP 2013-2022 at approximately US$950 million.**

Commencing with the promulgation of enabling framework elements pertaining to the new legal and regulatory construct for the RE sector, REA's re-constitution as an autonomous agency and its organizational reforms, the RESP will be implemented throughout its 10-year the term. Off-grid electrification development based primarily on the current target market approach for solar electrification development, as may be modified to draw solar PV services more directly under REA's service territory concession planning and service provider customer service model to gain program implementation and cost efficiencies, will continue unabated during the RESP performance period. **On-grid electrification development will require an initial**

transition period of up to three years, as the service territory plans and concession award and license process is implemented. During this transition period, REA will procure interim system operators for projects that are financed and built in service territories for which permanent service providers have not yet been installed.

List of Terms and Acronyms

ERA – Electricity Regulatory Authority

GIS – Geographic information system

GOU – Government of Uganda

MEMD – Ministry of Energy and Mineral Development

MFPED – Ministry of Finance, Planning and Economic Development

Minister – Minister of Energy and Mineral Development

MW - Megawatt

PV – Photo-voltaic

PVTMA – Photo-voltaic Target Market Approach

PSFU – Private Sector Foundation of Uganda

RE – Rural Electrification

REA – Rural Electrification Agency

REB – Rural Electrification Board

REF – Rural Electrification Fund

RESP – Rural Electrification Strategy and Plan

SHS – Solar home system

UECCCL – Uganda Energy Credit Capitalization Company, Ltd.

UETCL – Uganda Electricity Transmission Company, Ltd.

1.0 INTRODUCTION

This document presents the Rural Electrification Strategy and Plan (RESP) of the Government of Uganda (GOU) covering the period of 2013-2022. The RESP succeeds and modifies the first RESP covering the period 2001-2010, which demonstrated important lessons on how the rural electricity sector must function in the future to effectively serve the expectations of the rural population of the country. Weaknesses and bottlenecks in the previous program framework are identified and opportunities to strengthen the current implementing scheme are fully exploited. This RESP states the general policy of the GOU and the principles that will underlie strategy to ensure its success. The primary implementing elements of the approach are defined, drawing upon the lessons of experience to date, including important reforms that are needed in the enabling and institutional framework. The RESP states the overarching rural energy access goals for the effective period of the strategy, together with the estimated funding resources which are to be furnished for its achievement.

This new strategy was formulated following a comprehensive review of the results of the foregoing rural electrification (RE) development period, assisted by advisory experts and drawing from successful experiences in other parts of the world with rural electrification development.

1.1 Background and Lessons Learned

Rural electrification constitutes a critical part of the GOU's long-range program to eradicate rural poverty and to foster opportunities for rural Ugandans in every part of the national territory to prosper. Providing widespread rural-area access to electricity –

(a) Stimulates rural employment diversification, and draws value-adding enterprises to rural areas in order to improve farmers' terms of trade and income levels;

(b) Enhances food security for the entire population;

(c) Creates the opportunity for rural citizens to join with the urban population in enjoying electrification's many modernizations and lifestyle benefits; and,

(d) Contributes significantly to enabling rural people to participate more broadly and fully in national economic and social development and in harvesting its fruits.

In order to realize these aims, first and foremost, rural electrification shall henceforth be promoted and carried out under a model that rests on the fundamental idea of harnessing the motivation of rural communities and beneficiary populations to the machinery of providing electricity service in rural areas. A key lesson of successful electrification experience around the world is that large-scale yet sustainable rural electrification, with high penetration rates and strong commercial performance, can occur when rural people can act in their own behalf under a disciplined implementing scheme. The Government's program priority shall be to render available all necessary opportunity for the rural population to acquire these capacities under an accessible program of support.

This is but one of many conclusions that were derived from a systematic analysis of the past ten years' rural electrification experience in Uganda that was conducted at the end of the first RESP.

1.2 Lessons Learned

Previously, rural electrification investment sponsorship was offered to private investors and entrepreneurs to lead rural energy service development as part of the Government's policy of decentralization and privatization of the energy sector. However little entrepreneur-led electrification investment actually occurred, as this policy proved to have placed excessive faith on the motivation of capacities of private sponsors to undertake risk and perform this role. To fill the void, Government stepped in with a more direct approach to funding and implementing rural electrification, with improved results in terms of investment flows, but other impediments including a very low rate of consumer service connection have become evident and that must be addressed. The new strategy was formulated from an understanding of lessons learned from the first RESP and from analysis of other constraints in the current program model.

1.2.1 Accelerate rural electrification development by adjusting the model

The simple fact is that the underlying economics of investing in electricity infrastructure in areas where people are poor and industrial development has not taken root bears considerable financial and commercial risk. The original model created a mismatch of short-term profit interest in a business that takes decades to develop. It is rather the other way around – government must lead, use patient and low-cost capital financing, build the initial organizational and infrastructure capacities for electricity services, promote electrification-related economic development and supportive measures to spur rural modernization and income growth. Thereafter it becomes feasible for private investors and commercial financing to take over.

1.2.2 Address underlying RE business risk with appropriate solutions

The previous ten years' experience highlighted the key risk factors in RE that served to inhibit rapid expansion. In particular, the issue centers on reducing commercial risk. Needed are new approaches for:

(a) Effective marketing of consumer electricity service to aggregate and build demand.

(b) In particular, lowering barriers to rapid accumulation of customers and to increasing energy use in productive activities.

(c) Enforcing discipline at the RE "cash register" – commercialization functions, including policing electricity and materials theft.

Local models such as cooperatives, if correctly developed and supervised, give the beneficiary populations and consumers direct responsibility for these things. The peer interest principle can work wonderfully in terms of making sure people are treated fairly and the service providers and customers alike live by the same rules. This has been proven in other rural electrification cases worldwide. However, it is important that such entities are run as businesses and see themselves as being liable for their own financial survival. This is accomplished in how they are constituted, supported and supervised.

1.2.3 Ensure that operational and program scale is feasible

Accelerating the pace of electrification means achieving program economic, commercial and administrative scale as soon as possible. This issue of economic scale applies to:

(a) The size of the service territories and the operating enterprises.

(b) Rendering the consumer/demand aggregation function to market both on-grid and off-grid services and sales on an "area-coverage" principle.

(c) Formulating resource allocation and administrative systems -capital financing, in particular, but also procurement – so that they are scalable and cost efficient.

The current set of rural electrification providers are struggling because they are too small. They are given the areas that are predominantly domestic and do not have the ability to balance this rural household customership with more developed service areas. Under the current arrangement, it will take many years for these service areas to be viable, and in the interim, the costs felt by the consumers will be unaffordable and the consequent need for operating subsidy will extend far into the future. In short, the rural service territories must be sufficiently large to generate revenue levels as needed to meet service providers' financial cost requirements including cost of capital investment financing.

1.2.4 Centralize planning and management for the RE sector and simplify program implementation

The current RE program is being implemented in a disaggregated manner with many players acting in overlapping and insufficiently coordinated roles. This flowed from the original "demand-response" model that assumed government would not need to plan and orchestrate RE development, but merely top-up the capital needs of private sponsors, who would do all the planning and implementation management. Re-thinking the model means re-ordering the way the sector is planned and resources are allocated. The best and only way, from experience, is to centralize authority in the lead entity responsible for the RE sector.

Rural electrification planning and policy decisions should be divided between senior-level authority to ensure that electrification is carried out in harmony with the broader scope of national economic and social development planning and that the rural aspect of the nation's electricity infrastructure development is adequately coordinated with the other power sector functions and entities. The RE sector must be managed in a coherent planning and development framework covering:

(a) Allocation decisions for resources and administration of capital funding and accounts.

(b) Planning for projects including design to facilitate, among other aims, standardization of all construction and installations under a more comprehensive method based on the sequenced expansion of the service territories as a function of the service provider's long-range plan.

(c) Program financing and capital resource management and fiduciary controls.

(d) Construction management and also procurement so as to obtain scale economies and facilitate standardization of all equipment and materials.

(e) The development, support and supervision of the implementing entities – the service providers, both for on-grid and off-grid – but also in working closely with the various other stake-holding partners who have important roles in building capacities, regulating electricity service provision, and furnishing complementary financial and other sector development support.

(f) Contracting with, and technical guidance to, the private sector "services" providers –

contractors for engineering, construction, solar PV installations, and related RE sector support services.

All of these RE sector functions should be planned, approved and monitored under a comprehensive, annual RE plan. In effect, the annual plans would be the vehicle for implementing the RESP in a logical and comprehensive way, and for monitoring the progress of RESP goal achievement on a routine basis.

1.2.5 Plan for long-term program sustainability

The RE system as it has evolved to date is complex and not disposed to adequate planning and coordination of resources. It also implies an indefinite term of providing subsidy. Long-term program sustainability means developing internal mechanisms for financing and assuring that all other major functional requirements of rural electricity service and rural utility sustenance can, in time, be addressed independently of government support. The key features of the strategy and plan for the coming ten-year period should guarantee that the program is put on a path to self-sustaining viability:

(a) Technical standards and materials specifications for RE distribution construction should be reviewed and adjusted to incorporate design efficiencies to reduce cost and facilitate operational reliability and extended life-spans, to be reviewed and updated with new "best practices" on an on-going basis.

(b) Capital expenditures should be provided under a system of capital recovery wherein the resources are recaptured by the Rural Electrification Fund (REF) for reinvestment in the future. This will gradually diminish the requirement for government appropriations and for the wholesale rate charge to fund electrification.

(c) Financial support to the service providers should be enhanced from the current system of initial capital investment to include financing for the on-going requirements of the service providers – working capital for start-up and financing for system "backfill" where access already exists, and for distribution system replacements and capacity upgrades.

(d) RE program financing support must extend to end-use promotion and other forms of consumer financial assistance, particularly the lower-income households, in order to jump-start the process of electrification-driven rural economic development.

(e) To relieve the government of having perpetual responsibility for the RE sector, the strategy should anticipate the development of, among and by the service providers as a group, privately owned and managed common-services entities to supplement publicly-provided assistance in aspects of materials procurement, financing, engineering and other specialized services, and power supply.

(f) Adequate technical assistance and advisory support should be included in the plan to assist the primary stakeholders to adapt to new program mechanisms, train personnel, particularly the service providers and particularly the cooperatives, and develop the required program management and business administrative culture.

In presenting a new strategy and model for future rural electrification development, the government does not abandon its original belief that the private sector must play important roles in carrying out its rural electrification development program. This RESP affords full opportunity to private-sector actors to furnish the necessary management, operational and industrial support and other essential functions needed to achieve a rapid rate of rural electrification development, and also to capitalize on the successes that have been achieved in the past ten years, without taking any backward steps.

2.0 STATEMENT OF RURAL ELECTRIFICATION POLICY AND PRIORITIES

Rural electrification is an integral component of the Government's overall policy and program to promote national economic and social development and integration. Currently, less than 7% of the rural population has electricity service. The RESP represents a comprehensive program to achieve universal electricity access by the year 2040, and addresses impediments that have thwarted the achievement of the goals established in the previous strategy and plan. It also takes cognizance of the UN initiative on modern energy access for all which obligates all governments to ensure the availability of clean and affordable modern energy in all homes by 2030. This includes the provision of cleaner, more efficient technologies for cooking and lighting in households.

2.1 Enhanced Rural Electrification Operating Systems

The revised program policy and approach establishes new and simplified implementing structures to:

(a) organize the rural energy services market in order to achieve scale and commercial viability as rapidly as possible;

(b) facilitate the sustainable flow of capital financing to rural electrification and rural energy service infrastructure, as well as to overcome economic barriers to rural consumers in accessing such infrastructure;

(c) empower rural electrification planning and implementing entities with appropriate authority and accountability to conduct their roles under adequately understood and transparent mechanisms;

(d) ensure that sufficient capacity-building support for all stakeholders is provided in order to quickly adapt to the roles that they must play in a business-like fashion; and

(e) reduce barriers inhibiting widespread electricity service provision in rural areas.

2.2 Underlying Principles of Sound Rural Electrification Development

The rural electrification program defined in this new strategy shall be achieved by adhering to the following set of fundamental rural electrification program policies and principles.

2.2.1 Economic and commercial soundness and sustainability

Rural electrification as with all public infrastructure development must be market-oriented and demand-driven, founded on the economic needs of the population and economy. Economic and commercial principles of economic scale, linking investment with financial performance criteria, and orienting

services to meet needs will guide the general management and allocation of rural electrification investment resources, with particular emphasis on assuring that the beneficiary communities and operating entities responsible to them for electricity and energy services are charged with the necessary authorities and capacities to render rural energy service provision to be fundamentally oriented to responding effectively to long-term rural development needs as to the satisfaction of consumers' expectations.

2.2.2 Social and regional equity

An associated objective of the strategy is to ensure that rural electrification is widely accessible to the entire rural population, as part of the Government's objective to reduce poverty and deliver community and social services to the public. Entities responsible for implementing the strategy will assure that rural consumers are fairly treated and that assistance is equitably accessible to less advantaged rural regions.

2.2.3 Least-cost service

Implementing policies and practices for extending service should fundamentally take into account the aim of offering electricity service to rural consumers at the lowest possible cost. This principle applies to technological selection and related efficiencies, the selection of service providers and determining allowable costs in tariffs, RE program administrative and operational best-practices to obtain scale economies, obtaining least-cost power supply, and setting and enforcing operating standards and compliance thresholds that optimize operational efficiency.

2.2.4 Program cohesiveness, coordination and simplicity

In order to accelerate the pace of rural energy service access in rural areas, the strategy and program design must be coordinated under a cohesive planning and implementation framework. The implementing mechanism and processes must be oriented to take full advantage of scale economies and eschew the disaggregated methods that have proven administratively burdensome and costly.

2.2.5 Good governance and transparency

The entities engaged in managing and implementing the strategy shall be oriented and reconstituted so as to foster and support an efficient, market-based rural electrification sector, employing appropriate and rigorously applied policies, rules and procedures in fulfilling their obligations to merit the confidence of all program stakeholders, funding sponsors, and the beneficiary populations.

2.2.6 Efficiency in program implementing structures and processes

The responsible implementing institutions will operate as enabling rather than implementing agents and will be aligned to conform to this principle. The primary agency for achieving the aims of the RESP will focus on the development of effectively scaled service providers, charged with meeting economic, technical and operational standards that assure effective use of resources and good business practices, including the principle of cost recovery.

2.2.7 Organizational competencies

The implementing framework of the RESP will be only as good as its empowered organizations, managers and personnel are competent and diligent in performing their duties. Therefore, emphasis will

given to strengthening organizational competencies with the support of timely, qualified expert assistance and by providing training to directors, managers and technical personnel in the prescribed operating policies and procedures for all stake-holding entities.

3.0 OBJECTIVES OF THE RESP 2013-2022

The primary objective of the RESP is:

> "**To achieve an accelerated pace of electricity access and service penetration to meet national development goals during the planning period and beyond".**

A secondary objective is to ensure that, progressively, the program facilitates access to all forms of modern energy services to replace kerosene for lighting and other forms of traditional cooking and heating.

To accomplish these objectives, the RESP adopts the following measurable objectives, divided into three basic sets of time-bound program results.

3.1 Rural Electricity Investment and Access Objectives

The revised model for rural electrification development will be executed in a coordinated program of on-grid and off-grid electrification services. The basis for both types of program investment and services will be the formulation of scaled electricity service territories, administered by the Rural Electrification Agency (REA) through electric service providers (ESPs) for both forms of services, with the support of program implementation partners. Implementing measures to address changes in the enabling and program implementation systems are presented as a set of conforming objectives in the second part of this summary of the RESP's objectives and further defined in the sections below.

3.1.1 Rural electricity access baseline

An assessment of rural electricity access at the close of the first RESP determined that less than 5% of the rural population had electricity service, as contrasted with the RESP's goal of achieving 10%. In the future, the Government's rural electrification access objectives will be closely monitored on an annual basis as part of a comprehensive planning procedure, to include a routine appraisal of the effectiveness of program implementing systems and processes to correct weaknesses and to identify impediments to expanding access together with solutions to such impediments.

RE program investment and the corresponding rural energy service objectives of the RESP covering the period 2013-2022 are defined below.

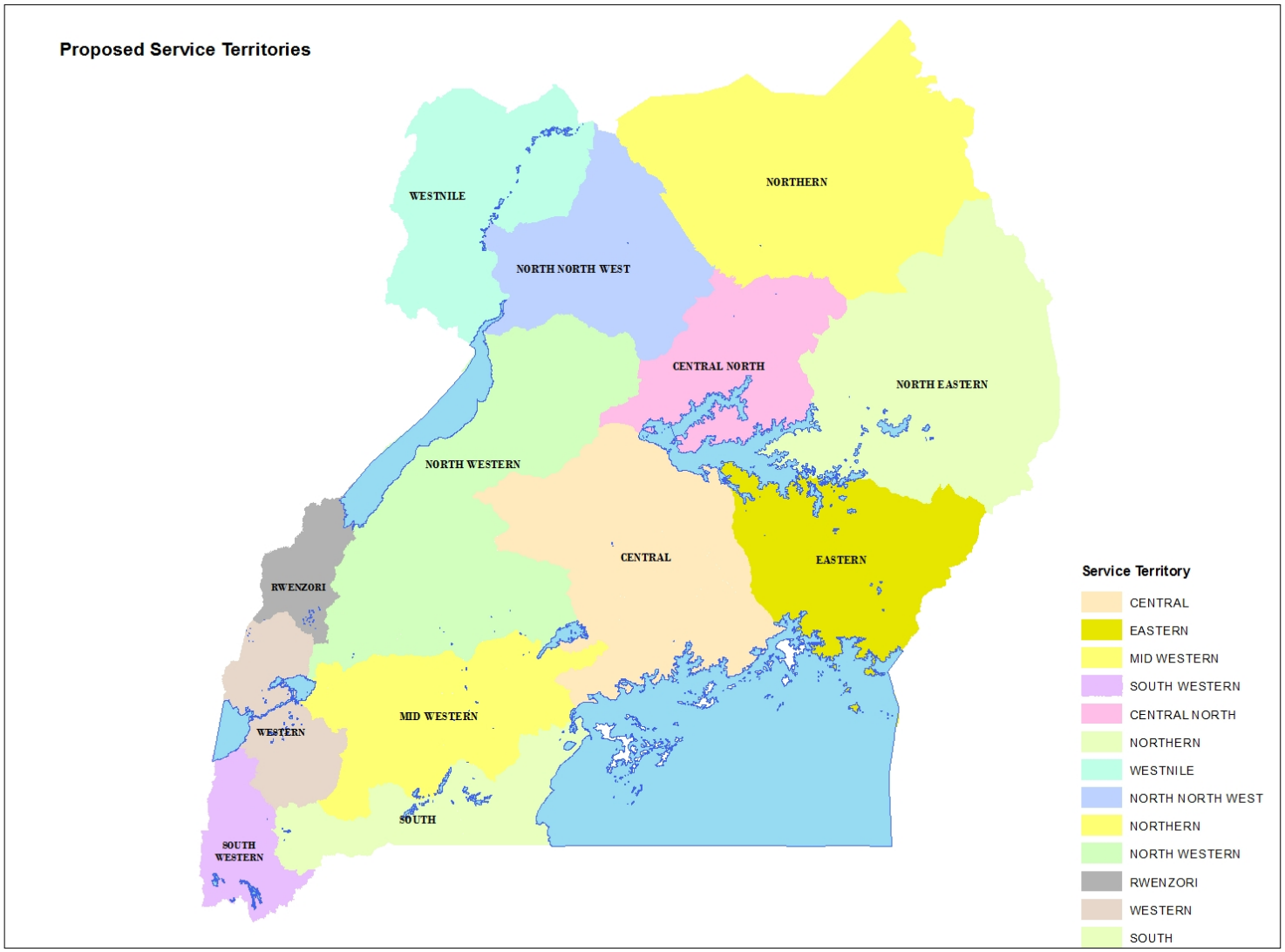
3.1.2 On-grid electricity service expansion

A reconfiguration of the rural electrification sector into thirteen (13) commercially-scaled service territories underlies much of the reform provisions discussed in this document[1]. Establishing these territories with permanent service providers will be an important early milestone objective of the RESP and prerequisite to delivering capital investment in-flows for system construction.

[1] This excludes the rural areas of the present Umeme electric distribution service footprint, however the estimates for rural access stated herein include customers in these areas, except as noted.

Investment targets are derived from 10-year business plans for each of the service territory concessions in GIS-based and managed construction programs. Fig. 1 presents the geographical configuration of these rural service territories, contiguously arranged around Umeme's current distribution footprint and covering the entire territory of the country. The associated number of new consumer services from these planning estimates is 1,276,500 connections, including the rural areas of Umeme's service territory.

Fig. 1. New rural service territories



3.1.3 Off-grid electricity service expansion

Off-grid electricity services comprise several types of electricity services based on renewable energy technologies, primarily solar photo-voltaic systems, and investment in islanded min-distribution systems drawing electricity supply from decentralized power generation facilities.

The total number of service connections including solar PV installations for the 10-year RESP period is 138,500 from solar PV home systems (SHS) and mini-grids.

3.1.4 Access Goal

The access targets estimated above are equivalent to an overall access level of 26% of the rural population in 2022. On-grid and off-grid service expansion goal achievement to meet these targets will be monitored and measured on an annual basis, segregated by service territory, as a function of a rigorous new REA planning framework and routine.

3.2 Enabling System Objectives

Commencing in the first year, several reforms and adjustments to the general RE program model will be addressed to realign the enabling systems and implementing mechanisms necessary to achieve the acceleration of service expansion and to meet the stated access targets of the new ten-year plan. The programmatic adjustments will be phased-in over a period of approximately three years so that by 2016, a new and simplified model of service delivery will be established. The chief implementation objectives of the new RESP are as follows:

1. Modification and enactment of pertinent legislation and policy implementing provisions relating to legal definitions, institutional policies and structures, and organizational procedures and rules required to enable the RESP's new rural electrification development model.

2. Revision and implementation of a new RE marketing and management systems based on the continued and long-term development of service territories, together with ESP capacity building, oversight, and financing of periodic construction program investments.

3. Development, approval and adoption of improved RE sector planning procedures, together with service provider monitoring and performance benchmarking.

4. Adjustment and promulgation of modified rural electric distribution, electricity marketing and retailing concession systems and rules.

5. Formulation and adoption of design and construction standards for economically efficient rural electric distribution development.

6. Establishment and implementation of REA debt financing and similar long-term contracting mechanisms and procedures with electricity service providers, capital accounts management and loan administration systems.

7. Implementation of transition provisions and arrangements, including procedures for adapting current and on-going programs and project investments into the new model.

These RESP enabling system objectives and their particular implementation measures are further defined and elaborated in the following five sections.

3.3 Promoting non-electricity modern energy services

The programme will promote a comprehensive approach to accessing modern energy services to the extent possible. The electricity services will include grid / mini-grid power, solar systems, solar lights and LED lamps. Where it will not be possible to access one form of electricity service or another, the program will promote the inclusion of the dissemination of other modern energy services through the

existing electricity service providers. The items that can be promoted LPG cookers and cylinders, gas lamps, improved charcoal stoves, e.t.c Since it is not common practice for electric utilities to engage in the provision of other energy services beyond electricity, a package of incentives will be worked out to encourage them to undertake the service. Micro-finance institutions will also be requested to provide credit services for these energy appliances in the same way they are currently doing for the solar PV program.

4 REORIENTATION OF THE RURAL ELECTRICITY MARKET AND IMPLEMENTING SCHEME

While there were several important accomplishments during the term of the first RESP, including the establishment and development of the REF and its administrative systems, the initial development of a diverse Ugandan electric service development industry including growing the number of solar PV companies from a handful in 2000 to over 30 by 2010, the RESP's access expansion targets were not met. The new strategy and plan adjusts the problems encountered and installs improved implementation approaches for planning, financing and implementing rural electrification investment programs.

4.1 Results of the RESP 2001-2010 and Required Reforms

The RESP for 2001-2010 did not meet expectations. The plan anticipated growing rural electricity access ten-fold, from the then-estimated 1% percent in rural population access to 10% over the 10 year period. However the actual result was to increase rural access by about 7% by 2013. Over 400 grid extension projects, large and small, were undertaken but with consumer service connections rates often well below planned levels. Whereas the goal of the RESP was to connect 400,000 new consumers only a fraction of this number was achieved. Of 80,000 projected solar PV installations, 7,000 were actually installed under government-sponsored projects by 2010.

Several factors account for these disappointing results, including a failure to educate the rural population of the benefits of electricity and inadequate marketing by service providers, the high cost of service connection to rural households, the lack of interest on the part of electric distribution utilities and solar PV suppliers to enter the rural market, and especially in time lost in testing the original concept of the REF to support private initiatives. Only three such projects were taken on by private investors, with a total increase in consumer service of some 3,500 customers. The Government therefore resolved to step in and undertake direct investment in rural service extension, which yielded moderately improved results, but the program must now be put on a footing to accelerate the pace of RE access expansion.

4.2 Revising the RE Scheme to Accelerate Electricity Access

Based on the lessons learned from the past and from program successes in other countries, the Government's strategy has been modified to implement rural electrification investments on a larger scale, to simplify implementing structures and streamline processes, and adopt other measures that will permit a more rapid rate of access growth in rural areas. Policy measures that will be applied in carrying out the RESP 2013-2022 are summarized in the following subsections.

4.2.1 Centralized RE sector planning and management

In order to improve coherency in the sector and to eliminate overlap and diffusion in how the strategy is implemented, all direct responsibility for rural electrification program planning and management will be

centralized under REA. REA will be re-constituted to act as a more autonomous, specialized government authority under the overall supervision of the Minister of Energy and Mineral Development (MEMD). The REA board (Rural Electrification Board, REB) shall assume enhanced fiduciary authority and responsibility for directing the REA program and will be responsible for supervising REA management. REB will further be responsible for reporting on REA performance to MEMD. For its part, the REF will be restored to its original purpose as the consolidated repository for all Government-sponsored and donor-provided RE investment financing, operating as a revolving fund.

REA shall adopt a set of standardized procedures for all major functions. Such procedures will apply to how sector planning is carried out, distribution system projects are designed, evaluated and approved, electrification system construction, equipment, materials, and support services are procured, project financing and capital expenditure accounting is conducted, service providers are developed, supervised and monitored to assure efficiency compliance with REA operating procedures, and program evaluation and results monitoring is routinely performed.

REA will conduct its newly defined role in a business-like manner and shall be so constituted to operate efficiently and evolve into a financially self-sufficient and independent entity. It will manage itself to maintain a tightly controlled and professionally competent staff and will employ out-sourcing and partnering arrangements for carrying out the majority of its implementing functions, including engineering design, distribution system construction and off-grid installations, electric system operations and services, and capacity building and training support. Through its reporting responsibilities with the MEMD, REA will maintain closely coordinated planning relationships with the Ministry of Finance, Planning and Economic Development (MOFPED) for investment funds acquisition, planning and coordination with other functional entities of the power sector including the Uganda Electricity Transmission Company, Ltd. (UETCL) and the Electricity Regulatory Authority (ERA), and planning coordination with other ministries and agencies of Government responsible for local government affairs and rural and agricultural development.

4.2.2. Rural electric service territories

REA shall plan and implement the strategy on the new model of scaled, multi-technology electricity service territories that shall be the basis for all rural electrification planning, project development and planning, financing, service provider supervision and support. This policy is designed to ensure that commercial viability of rural electrification investment may be assured and achieved , paving the way for the orderly in-flows of larger increments of RE capital investment financing on a rational, accelerated and sequenced pattern.

This new approach will not only allow for improved investment scale but will be implemented with a view to aggregating demand for electricity services under a more deliberate consumer outreach and marketing scheme. Related elements of the new strategy are designed to lower household financial barriers to receiving service connections and link marketing for on-grid services directly with off-grid electrification services such as solar PV.

Since the service territory electrification expansion programs will be carried out simultaneously, electrification growth will occur evenly throughout the country as a robust, national program. It is expected that, by the end of the 10-year planning period, the major backbone distribution system will extend throughout each service territory. Over time, as local economic and income growth follows the path of electric distribution expansion, an increasing number of households will gradually be able to meet the eligibility criteria to receive service.

4.2.3 Electricity service concessions

RE infrastructure operations shall be performed by private service providers that will be duly licensed to perform the expansion programs and be responsible for ensuring that service is offered widely to all eligible applicants in their service territory concessions according to service territory expansion plans that are established, approved and regularly updated as the basis for receiving financing support. Such service providers shall include, but not necessarily be limited to, privately-owned distribution companies and electric cooperatives, under conditions that may permit the incorporation of electricity and rural energy services demand aggregators working in concert with the licensed operators of the electric distribution systems. The potential need and role for demand aggregators may become apparent where the licensed on-grid service providers are lagging in meeting the indicated area coverage requirements of their license and service territory development plans, or as a function of promoting off-grid services in tandem with on-grid services.

Electric distribution concessions will be awarded in a competitive selection process conducted by REA. In any service territory for which no qualified bid is received, REA may directly undertake to establish and develop a new service provider using an electric cooperative model. A comprehensive methodology will be developed for this purpose, starting with the appointment of a core management team to form the cooperative, recruit members, and build and train staff drawing from the local labor market.

The service territory licensees will be required to provide electricity service on an "area coverage" basis to ensure that all rural residents who meet eligibility requirements will have the opportunity to receive service. Each service provider will develop a long-term service territory expansion plan, as the basis for adding new investments every 2-to-3 years, so the access goals will be implicitly defined and managed on a progressive basis within the planning framework. Where extension of the distribution network is not feasible, off-grid electrification programs will be designed and aggressively marketed.

4.2.4 Off-grid electricity services

Off-grid electrification services, comprising energy service technologies not dependent on the national grid shall be offered and furnished to eligible consumers in the service territories in tandem with on-grid electrification services, including solar PV installations and islanded community electrification projects.

REA's PV Target Market Program (PVTMA) will serve as the central component of the off-grid electrification program, modified, as may be successfully tested, to permit PV installations to be marketed and implemented in tandem with on-grid electrification expansion in the service territories under the long-range service territory expansion plans. Several models for this program may be tested, including incorporating solar PV electrification in the service expansion programs of the on-grid service providers, acting either as demand aggregators – possibly with the facilitative role of local agents of the service providers – or as the service providers themselves. In either of these alternative approaches, solar PV companies are responsible for implementing the program as contractors selected and contracted by REA.

Looking to the Government's policy aim of universal electrification and recognizing the practical limitations of extending formal electricity services including SHS to rural households that are beyond the economic reach of such service options, REA shall also undertake an aggressive program that will render low-cost mobile solar PV devices accessible to every rural Ugandan family within the next 20 years.

4.2.5 Capital expenditure financing and other financial support

Capital financing for infrastructure development for electric distribution-based investment shall be furnished under a system of long-term debt financing with electric distribution licensees, initially in the form of REA leases with the service providers that are convertible to loans once the service providers demonstrate professional utility competencies and compliance with the terms of their concession awards and licenses. The debt financing shall cover both the cost of the distribution infrastructure construction and the majority of the cost of consumer service connections. The financial obligations of the service providers shall provide for long-term capital repayment at affordable financial cost, with appropriate payment deferral allowance to permit the licensees to achieve operational and financial stability, determined by REA on a needs-test basis. Initial capital financing for system construction may therefore include a grant component should it be determined that such enhanced financial support is required to render the service providers financially viable.

Off-grid electrification financing may take several forms, including the prevailing model of the PVTMA including grant funding by REA for a portion of the installation cost and the balance through medium-term loans offered by microfinance agencies. In the event that a modified approach that incorporates solar PV electrification as part of the on-grid electrification expansion program, the debt portion will similarly be financed by REA in medium-term low-cost loans to the service providers whether they are the solar companies or the on-grid service territory concession-holders.

In addition, other financing support shall be in the form of start-up and working capital to allow the service providers to acquire the necessary administrative and operational facilities and personnel, as may be the case, financing for the customer's portion of service connection fees and house-wiring, as well as additional financing to address such future and on-going capital expenditure in system replacements and distribution system upgrades, and service densification in already-served areas.

4.2.6 Tariff-setting and administration

Electricity pricing shall be determined and approved by the ERA according to the costs of electricity service provision, including operating and administrative expenses of the licensed service providers, depreciation allowance, financing charges and/or an established rate of capital return corresponding to investments made by licensees, however the initial on-grid system construction will be financed by REA in a combination of grants and long-term low-cost debt financing. Distribution operations and electricity commercialization costs will be determined on a cost-of-service basis however concession applicants may propose additional fees. Wholesale power costs including transmission and wheeling charges passed through to customers at the ERA-determined rates based on wholesale power purchase contracts, however latitude is provided to permit wholesale power cost subsidies for the economically weaker service territories, as a social equity measure, on a needs-determined basis.

Capital recovery, in order to ensure the long-term sustainability of REA financing, shall be a fundamental aim. Where capital expenditure financing is provided in the form of loans or leases, service providers will be granted tariffs sufficient to pay loan principal and interest or the equivalent cost under leases.

Consistent with the Government's policy emphasis to enhance opportunities for beneficiary populations to serve their own electrification interests and needs, the consumer-ownership model for service provision, which implicitly means greater motivation in obtaining better and more widespread service and local economic development opportunity than in obtaining profit from electricity services, shall be used to benchmark the competitive cost of service concessions in the licensing process.

4.2.7 Power supply

Power shortages and carrying capacity limitations on national grid are a continuing risk factor in accelerating the expansion of on-grid electricity service in rural areas. To alleviate this present and future constraint, REA, coordinating with ERA and partnering agencies, will undertake an aggressive program of investment in local rural power generation facilities for serving energy to rural electric service providers. This will include increase direct support for upstream power project site evaluation and feasibility studies and also modification to regulatory provisions to facilitate direct power supply contracting with local rural service providers among other measures to promote greater rural power supply investment.

4.2.8 End-use promotion and consumer services

To ensure the robust and dynamic economic and social impact of RE investments, agricultural modernization and new employment creation in rural areas, provision shall be made for coordinating RE development with complementary programs to promote electricity use in economically productive activities. In particular, the REF will contain a special financing account to support, through its regular financing relationships with the electricity service providers, consumer credit and productive uses investment financing.

4.2.9 Capacity-building support

Expert advisory support shall be provided for ESPs and financed through REA to ensure that the RE program and the implementing organizations receive the support that will facilitate capacity building to achieve the core competencies and knowledgeable required for high functioning rural electric utilities. The capacity building shall be extended to the program management and support entities as well as the service providers and private-sector participants providing professional and industrial services.

4.3 Key Assumptions

Heretofore, the Government's rural electrification strategy fundamentally relied on the willingness and capacity of private entrepreneurs to sponsor, plan, and implement RE services. The underachievement of the previous plan is largely attributed to the failure of significant private sector participation in financing and implementation of rural electric service. Henceforth, the strategy has been adjusted to match stakeholder roles and responsibilities with their basic interests and skill-sets and reduce the dependency of program success on factors that cannot be controlled – such as mobilization of private capital into inherently high risk rural energy markets. Critical assumptions of the 2013-2022 RESP include the following:

(a) The strategy's implementing structures and reforms shall be undertaken on in a timely fashion and program stakeholders adapt successfully to their roles with adequate organizational and competency development.

(b) There will be a robust response from the private and cooperative sectors in offering proposals for service territory concessions.

(c) The planned power supply expansion program, including power generation and transmission infrastructure, shall be expanded in coordination with RESP needs in such a fashion so as to meet growing rural electricity demand.

(d) Donor agencies commit to the new strategy and help to provide the needed capital expenditure funding and capacity-building support to implement the strategy successfully.

5 THE ENABLING AND PROGRAM ADMINISTRATIVE FRAMEWORKS

As part of the strategy's implementation plan, a number of actions pertaining to the legal, regulatory and administrative frameworks will be taken in order that the RE implementing scheme conforms effectively to the new strategic direction of the Government's program and policy.

5.1 Statutory and Regulatory Reforms

5.1.1 The Electricity Act

The Electricity Act of 1999 shall be amended to reconstitute the REF as an integral part of the REA as an autonomous authority of the Government, subject to the general fiduciary oversight and direction of the REB. The newly defined REA will be under the general policy supervision of the Minister of Electricity.

In addition, the amended Act shall establish a new definition for rural electricity and energy services and further establish that rural electric service concessions will encompass geographically defined, permanent service territories for which on-grid and off-grid electricity services shall be authorized and licensed by the ERA. The Act shall moreover authorize ERA to exempt qualified rural electricity service providers from the 5% rural electrification levy on wholesale power sales as an option for reducing rural consumers' tariffs. It shall further establish rules for REA financing of consumer service connections as part of its capital expenditure financing support to rural service providers, and provide special rules relating to the licensing and sale of rural power generating plants that are dedicated to supplying electrical energy to the rural electric service providers.

5.1.2 The REA Statutory Instrument

Following the revisions to the Law, the Statutory Instrument pertaining to the formulation of the REA will be amended to reconstitute the REA as an autonomous authority of the Government. Its provisions define the governance structures and administrative authorities of the REB; establish its reporting responsibilities to the Minister of Electricity; elaborate the responsibilities of the REA in respect to RE sector planning, financing, capital expenditure accounting, and program management for on-grid and off-grid electrification services; provide for special assistance programs in support of rural electric service providers including other forms of financing support and for purposes of promoting productive uses and economic development relating to electrification; and otherwise broadly define the authorities, responsibilities, and organizational structures, policies and procedures of the REA.

5.1.3 The regulatory framework

The regulatory model and rules shall be modified to accommodate the corresponding changes in the definitions of rural service territories and concessions, including new requirements governing service providers pertaining to service connections, off-grid services and consumer services such as the right to market and finance productive uses. Tariff-making policy and procedures pertaining to the financing of service providers' capital expenditures and enforcement of service providers' responsibilities to extend electricity service on the "area coverage" rule shall be included in a revised regulatory framework. The role and contracting provisions relating to rural power generation facilities shall also be addressed in the ERA regulatory framework governing rural service territories and service providers.

Critical policy principles for the implementing regulatory framework include assuring least-cost service to

rural customers and competition. The latter principle is provided for in assuring the development of a number of competent and motivated service providers to avoid a monopolistic character in the rural electric utility industry. The first of these principles shall be underwritten by favoring least-cost solutions and implementing methodologies, together with targeted subsidies based on demonstrated need. REA and ERA authorities shall include the right of intervention with service providers, in the case of demonstrated non-compliance with the terms of their licenses, including cancelation of their concessions for egregious and protracted non-compliance.

5.2 RE Program Policies and Administrative Provisions

5.2.1 Governance policies and systems

The implementation provisions of this RESP are to establish clearly defined structures, policies and procedures that, as a whole, render the RE program efficient, transparent, and well-governed as a function of rigorous and faithful compliance by the relevant agencies with their prescribed roles and responsibilities, according to such structures, policies and procedures.

As a more autonomous entity broadly responsible for RE sector management and implementation, the REA and its governing board will acquire a more comprehensive level of fiduciary responsibility and accountability. The REB shall have the authority to define and determine the REA's operating policies including its own operating systems and rules so as to perform its oversight responsibilities in a judicious manner. REA's management and professional staff shall be accountable to the REB for consistently complying REA operating systems and procedures as they relate to program planning and project selection and design. Among its particular responsibilities, the REB shall use its authority to shield the REA investment program and process from undue external influence, while undertaking to assure that its decisions and actions effectively reflect the policies of the Government.

5.2.2 RE planning and coordination

Overall responsibility for rural electrification policy and planning as a function of Government development policy and national planning, as represented by this RESP, is the purview of the MEMD. The Rural Electrification Board will be accountable to the MEMD for overall and day-to-day monitoring, reporting, and general liaison with the REA, as to other entities of the Government with functional responsibilities affecting RE.

Direct and comprehensive responsibility for rural electrification sector planning and management will be vested with the REA. REA's planning framework will be in the form of a rural electrification plan prepared and presented on an annual basis. The annual planning process shall be prepared by REA and presented to REB for final approval. REA annual plans shall be approved as the basis for all REA actions pertaining to, *inter alia* –

1. Service provider establishment, support, or intervention, as proposed by REA management;
2. On-grid construction project financing to service providers
3. Interventions and sanctions in the event of non-compliance service providers;
4. Off-grid project investments;

5. Annual REA budgetary and staffing plans;

6. Any or all remedial actions as required, whether at the statutory, policy or administrative levels, to correct or otherwise improve the functional systems or procedures of the RE implementing scheme and structure.

Approved REB annual plans will be presented to the MEMD as a routine matter of reporting, together with any recommendations by the REB pertaining to remedial actions requiring the Minister's action.

5.2.3 Service territory definition and concessions

The service territories shall be geographically defined to include all areas, as of the date of approval of this RESP, that lie outside of the licensed distribution territory of Umeme, defined as being the geographic area within 1 kilometer of its existing distribution network on this date. This basic rural service territory alignment has been configured to provide for a prudent, minimum foundation of consumership and electricity sales in each of the 13 territories so to support the financial revenue requirements of the licensed concession holders.

REA shall have the authority to modify, adjust, merge other otherwise alter the number and geographical dimensions of the service territories as it deems optimal and appropriate to assure the integrity and financial sustainability of the territories and of the program at large, and so as to be consistent with the legal definition of rural electricity service.

Service territory concession awards shall be made by REA on the basis of a competitive selection process to determine the applicant having the lowest cost of consumer service provision while meeting or exceeding REA-prescribed organizational, financial and technical qualifications and eligibility requirements as well as demonstrated capability and commitment to the "area coverage" principle of multi-technology electricity service. Licenses for the selected applicants shall be granted by ERA upon its inspection of the concession selectee's compliance with licensing requirements and after a period of public notification and comment on ERA's intention to so grant a license.

REA shall prepare detailed, long-range plans for the electricity service expansion for each service territory as the basis for conducting the concession award process, taking into account both on-grid and off-grid electricity services. Off-grid services, including solar PV and other household-scale electricity service devices and islanded mini-grids drawing supply from small distributed power generation facilities, shall be programmed and monitored by REA by service territory, both to facilitate REA planning and results measuring and monitoring, and to facilitate the integration of off-grid services with the service territory concessions, as REA may determine is feasible and most effective to accelerate RE access.

5.2.4 Program financing and funds administration

The REF shall serve as the unique funds repository for all official program rural electrification financing, including receipts from the 5% charge on wholesale power; contributions from the Government's annual appropriations or from other Government sources; grants and loans received from donor agencies; contributions-in-aid-of-construction provided by, or on behalf of, rural communities; and REA service provider financing re-flows.

Eligible uses of REF investment funding resources shall include:

1. Capital expenditure financing for new rural electric distribution construction;

2. Financing to service providers for distribution system upgrades and replacements;

3. Financing for consumer service connections, either as part of new distribution construction or from existing distribution systems;

4. Financing for off-grid electrification projects and installations;

5. Financing to promote consumer electricity end-use equipment and agricultural modernizations and value-adding facilities as may be determined eligible by the policies of the REA;

6. Funding of REA's administrative and operating expenses; and

7. Other rural energy development consistent with REA's financing policies and as may be approved by the REB.

As a long-term program sustainability measure, it shall be the principal aim of the REA to employ a financing system that will over time allow the REF to acquire the character of a revolving fund, in order to reduce its dependency on Government appropriations and donor agency support.

Government-provided RE subsidies shall be provided in the terms of its financing agreements with service providers, to include grants covering a portion of capital investment and/or discounts and deferrals of principal repayment obligations in loans and leases, as demonstrated in service territory development plans and financial projections reflecting the relative economic and demographic characteristics of individual service territories. Supplementary financing support in the form of grants for certain purposes such as for working capital and consumer financing assistance may also be included in REA service provider financing agreements approved by the REB.

In general, the REA system of capital expenditure financing and accounting shall be transparent and ordered by the individual service territories, and shall be segregated by an on-grid construction account, an off-grid construction account, and the REA's internal operating account. REA's operating and administrative expenses shall over time be covered by transfers of REF operating margins from the first two of the two construction accounts to the REA operations account. Otherwise, the structure and administrative processes of the REF shall be determined by the policies approved by the REB and, as appropriate, by any special stipulations of RE funding agreements executed by the Government with donor agencies. As a matter of general policy, REA procurement and accounting shall follow the prevailing laws and regulations.

Notwithstanding this policy, administrative systems and processes shall be prescribed by the REB and administered by the REA so as to permit optimization of resource use through application of economies of scale, and also administrative efficiency through outsourcing of services and materials supply to private contractors.

5.2.5 Rural power supply

All REA-implemented RE program expansion and project development shall be subject to adequate planning and appropriate sequencing so as to assure that sufficient power supply, including generation and transmission capacities, will be available to meet the estimated demand arising from new RE investment.

To facilitate this policy, each service territory plan will consider the power supply implications of the investments that are proposed. REA shall include as part of its annual planning and reporting to MEDM such measures as are required of UETCL regarding necessary investments in power supply and transmission facilities. Dispatching issues related to temporal or seasonal capacity shortfalls will be included in the REA annual planning process in an effort to minimize the impact of power curtailments on rural service providers, should capacity shortfalls occur.

Notwithstanding the prevailing legal or policy imperatives regarding the rights and responsibilities of other power supply authorities and agencies, REA shall be responsible, in concert with the Uganda Energy Credit Capitalization Company, Ltd. (UECCL), for supporting the development of private investment in rural power facilities, including rural power generating facilities and transmission assets, as necessary to meet the local power supply needs of the rural service territories, under conditions where deficiencies in the capacity requirements on the interconnected transmission and distribution grid may exist. Furthermore, ERA shall be required to approve and license such new rural power generating facilities of up to 20 MW in capacity, as REA deems necessary, and that are dedicated and contracted directly between rural electric service providers and the investment sponsors and operators of such facilities. As part of this policy, licensed service providers shall be authorized to invest in, and operate, power generation facilities whose output capacities combined do not exceed their demand requirements are dedicated solely to their own energy and power demand use.

6.0 ORGANIZATIONAL AND FUNCTIONAL STRENGTHENING MEASURES

6.1 REA Organization, Planning and Program Management

The REB and its constituent elements, the REF, and the REA shall be organized to operate as a financially and administratively independent authority based on principles of transparency and good governance.

The REB shall be the supreme decision-taking body of the REA and shall meet no less than on a monthly basis. All program investment and financing decisions shall be vested with the REB following a set of board-approved policies laying out detailed processes and procedures for program planning and evaluation, financing and funds accounting, and service provider development, support and supervision. The REB's responsibilities, membership, structure and procedures shall be defined in the Law and its Statutory Instrument, including authority to establish subcommittees and related delegation of decision authority. The REB shall have the responsibility of recruiting and supervising the Executive Director (ED), who shall be accountable to the board for all management and operational decisions, including recruiting and supervisory authority for all REA personnel.

Following the general determination of the REA's operating systems defined in the board policies, the REA shall operate on the basis of detailed procedures and methods governing all functional activities including program planning; project analysis, design, and selection; REA investment financing and capital accounts management including quarterly presentation of REA's financial statements and REF balance sheet to the REB; service provider development, support and performance monitoring; human resources administration and REA budget formulation; and RE program evaluation and impacts monitoring, among other functions such a REA's public information processes and end-use promotion. Annually, the ED shall prepare for board consideration a comprehensive annual rural electrification plan as the basis for approving REA investments, actions relating to service provider formation, capacity-building measures and sanctioning, as required, and other remedial actions including modification of REA processes and procedures as may be indicated. The annual plan will clearly document the progressive development of RE service expansion against the 10-year goals and targets established in

the RESP, and will be furnished to the Minister and to other stake-holding entities.

6.2 Service Provider Development, Support and Performance Supervision

REA's program strategy shall fundamentally shift from its past focus on project development to planning and supporting electric distribution and energy services providers in each service territory to be commercially scaled and programmed as financially operational robust businesses. No project approved for financing by the REB shall negatively impact this general principle. Service providers shall be held responsible for meeting the planned service access targets of REA-planned and financed system improvements as the primary basis for determining the suspension or revocation of concession licenses by the ERA, as may be stipulated by REA.

REA shall employ a service provider reporting model that requires all recipients of REF financing support to furnish, on a monthly basis, detailed operating and financial statistics that will serve as the basis for performing key performance indicator analysis for evaluating and benchmarking the operating performance of service providers.

REA shall have the primary responsibility for the development, formation and operational support and monitoring of service providers. Under partnering arrangements with other RE program stakeholders, including the PSFU and cooperative sector agencies of the Government, REA shall include in its procedures and annual plans provision for furnishing financial support for capacity building and training that is provided by its partners.

6.3 RE Design Standards and Construction Implementation

REA shall adopt technical standards for all RE construction design including component equipment and materials specifications, as well as standardized procedures for electric distribution construction planning, service provider organization, operating processes including their operational reporting formats and procedures and related REA performance monitoring. These standardized systems are to be established to take all possible advantage of cost efficiency in electric distribution design, useful life extension of constructed systems and installations, and therefore lowering life-cycle costs of RE investments. Such standardization is also intended to facilitate administrative and cost efficiencies in REA procurement methods and materials management.

Adopting internationally-recognized "best practices" for RE construction planning, REA's format and procedure for electric distribution development shall form the basis for planning the build-out of the electrification infrastructure in the service territories to be consistent with the progressive and sequenced expansion of area-coverage, based on standardized technical, economic and financial criteria for optimizing construction project design and selection. This new and more technologically sophisticated model of program planning shall also provide for the planning and financing of off-grid installations and projects in order to maximize service coverage.

REA shall have adequate personnel and facilities, including the establishment of field offices, as may be determined by the REB, to carry out its responsibilities for RE construction management and service provider support and supervision. REA shall employ, under its procurement procedures, private sector contractors for project design and construction implementation, as for installation of off-grid services. Rural power projects shall be implemented under the current licensing procedure of the ERA by qualified project sponsors.

6.4 Organizational Capacity and Competencies Development

Adequate funding for technical assistance and training shall be included in the RESP financing plan and in the annual RE plans for building REA's professional capacities and for developing the required skills in REA's partners and contractors. A primary aim of REA's long-term development program for service providers should be the progressive formation of service providers' skills and organizational capacities to allow them to absorb, over time, functional responsibilities for system planning and program financing and procurement management. As part of REA's long-term development program, appropriate strategies should developed by REA and approved by the REB to support the eventual privatization of RE development under the self-determining auspices of the service providers.

7.0 IMPLEMENTATION AND FINANCING PLAN

The principal elements of the RESP's goal achievement sequence covers implementation of the enabling systems and organizational reforms, completion of the service territory plans and installment of the permanent concession holders, rapid mobilization of the PVTMA with appropriate modifications to its implementation on a more aggregated basis, and implementation of construction financing in each of the service expansion components.

The RESP's implementation and financial planning elements are summarized in the tables on pages 25, 26 and 28.

The RESP's implementation will occur throughout the period of plan, commencing with the formulation of the detailed structure of the service territory and concession system and the various enabling provisions relating to the policy and legal construct and institutional and organizational development elements of the RESP.

The on-grid electrification program is dependent on the formulation of detailed service territory plans and scheduling of construction projects. As service territory concessions are awarded and licenses issued by ERA, including service territory concessions that are awarded by REA to incumbent ESPs on the basis of "predominant capability," distribution construction financing to the appointed ESPs shall be executed under new lease agreements and advisory and training assistance shall commence. During the transition period for completing all of the 13 service territory plans and concession awards, a process requiring up to three years, REA shall continue to finance and construct project extensions from its current inventory of electrification projects. REA shall obtain a general temporary distribution system operations and sales license from ERA that incrementally covers newly constructed distribution assets for which interim system operators shall be retained by REA under contract.

Table 2 summarizes the costs and general sequencing of the RESP's service expansion program by component, with the associated annual increases of service connections and the resulting growth of the rural electric service penetration rate. Upon completing the 13 service territory plans, the estimates for the construction program may be more accurately defined.

Table 1. RESP Implementation sequence

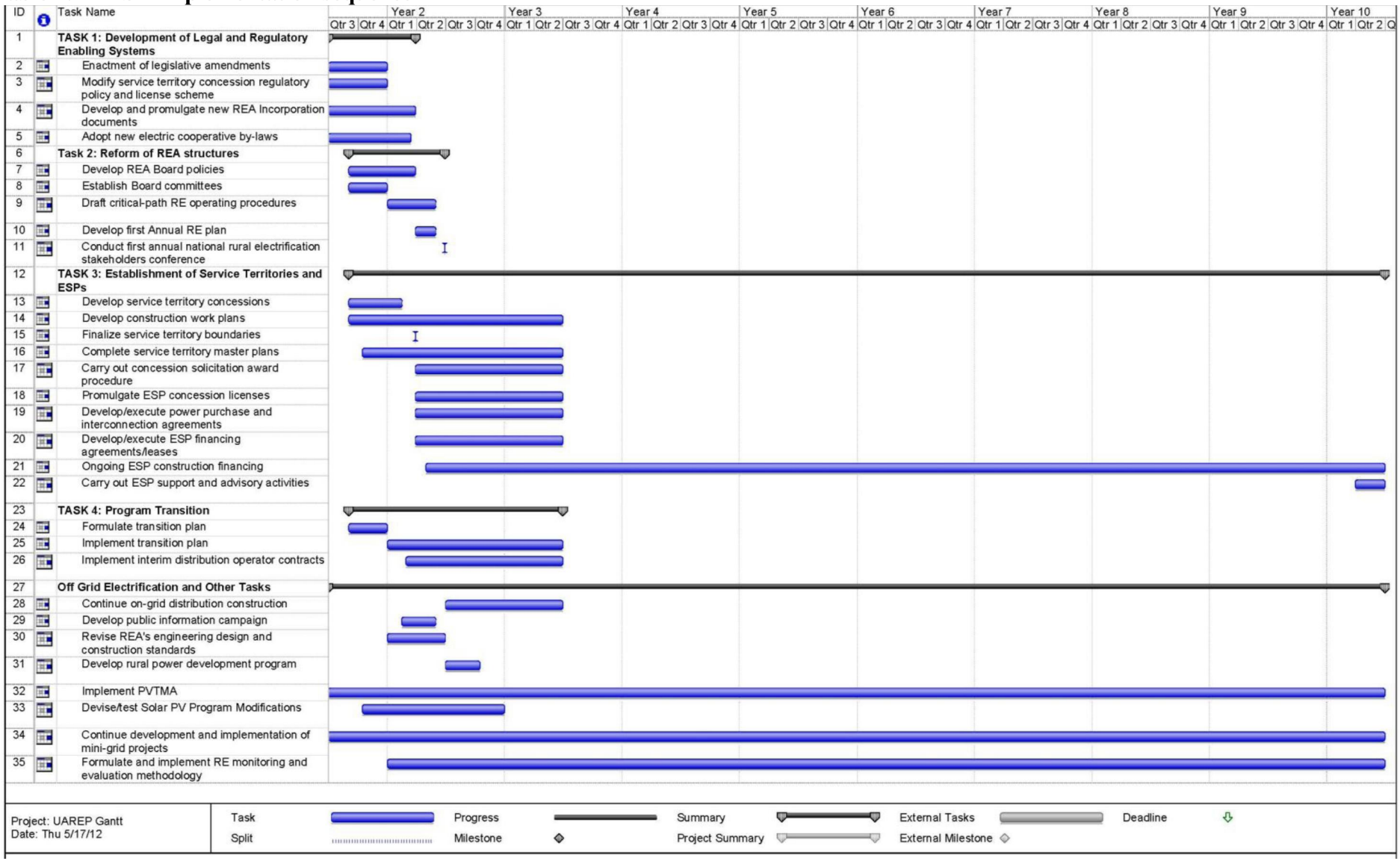


Table 2. RESP service expansion plan

Service Territory		Year 2013	2014	2015	2016	2017	2018	2019	2020
On-Grid Construction Programme									
Rwenzori	$	1,396,000	2,515,000	4,506,000	2,939,000	1,662,000	1,757,000	1,856,000	1,960,000
Central	$	2,641,000	4,832,000	8,655,000	5,645,000	3,193,000	3,376,000	3,566,000	3,765,000
Eastern	$	5,049,000	9,236,000	16,543,000	10,790,000	6,104,000	6,452,000	6,816,000	7,197,000
North Western	$	1,655,000	3,027,000	5,421,000	3,536,000	2,000,000	2,114,000	2,234,000	2,358,000
South Western	$	1,250,000	2,323,000	3,998,000	2,608,000	1,457,000	1,559,000	1,647,000	1,739,000
Western	$	2,542,000	4,594,000	8,228,000	5,366,000	3,036,000	3,209,000	3,390,000	3,579,000
Central North	$	1,311,000	2,398,000	4,925,000	2,801,000	1,585,000	1,675,000	1,770,000	1,868,000
Mid-Western	$	903,000	1,651,000	2,958,000	1,929,000	1,091,000	1,153,000	1,219,000	1,287,000
North Western	$	5,498,000	9,976,000	17,868,000	11,654,000	6,593,000	6,969,000	7,362,000	7,773,000
North Eastern	$	1,898,000	3,422,000	6,129,000	3,998,000	2,262,000	2,391,000	2,525,000	2,667,000
Northern	$	924,000	1,652,000	2,959,000	1,930,000	1,092,000	1,154,000	1,219,000	1,287,000
South	$	1,872,000	3,398,000	6,096,000	3,969,000	2,245,000	2,734,000	2,507,000	2,648,000
West Nile	$	1,840,000	3,194,000	5,721,000	3,731,000	2,111,000	2,231,000	2,357,000	2,490,000
Densification	$	10,000,000	25,000,000	40,750,000	51,500,000	52,000,000	52,000,000	63,000,000	33,000,000
Totals	$	38,779,000	77,218,000	134,757,000	112,396,000	86,431,000	88,774,000	101,468,000	73,618,000
Mini-Grid Construction Program									
	$	500,000	500,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Solar PV Program									
	$	2,750,000	2,750,000	3,250,000	3,250,000	3,250,000	3,250,000	6,175,000	6,175,000
Total Investment Cost									
	$	42,029,000	80,468,000	137,877,000	116,646,000	90,681,000	93,024,000	108,643,000	80,793,000
New Rural Services									
		50,000	120,000	200,000	200,000	200,000	210,000	220,000	150,000
Rural Electric Service Penetration Rate									
		7.58%	9.46%	12.58%	15.50%	18.24%	20.96%	23.64%	25.11%

The global cost of implementing the RESP is USD$951.6 million, summarized in Table 3 and segregated into three general categories:

1. On-Grid Electrification Financing, totaling $866.5 million, as the estimated capital cost of electric distribution system construction and customer densification, by service territory, including consumer densification within Umeme's service area;

2. Off-Grid Electrification Financing, totaling $55.4 million, comprising the solar PV program associated with the installation of 130,000 new solar home systems throughout the 13 service territories, the capital cost of islanded mini-grid projects estimated to add 8,500 new service connections, and the cost of pre-investment support for advancing the development of larger distributed power generation facilities directly serving the power supply requirements of the on-grid electrification service providers. Achieving the solar PV program target relies on the implementation method employed by REA, which in turn depends on the success of testing new models. Doubling the level of SHS installations from the current annual pace of 10,000, as indicated in Table 2, assumes some level of improvement will be obtained, and this estimate of the expansion program may be overly conservative.

3. Other Costs, totaling $29.7 million, including long-term technical assistance and training program costs during the RESP period, the cost of ESP working capital grants to support start-up costs and ESP customer financing program assistance relating to service connection fees, house-wiring and the purchase cost of electricity-using appliances and productive uses equipment. It is estimated that, during the RESP period, initially 10% of the customers served by the grid and mini-grids will be eligible for such financing at an average financing amount of $120.

Table 3. Global RESP financing requirements

	Funding Components		Funding Amounts (USD Millions)	
1	**On-Grid Electrification Financing**			
	a.	Rwenzori	$22.8	
	b.	Central	$43.8	
	c.	Eastern	$83.8	
	d.	North Western	$27.5	
	e.	South Western	$20.3	
	f.	Western	$41.7	
	g.	Central North	$21.8	
	h.	Mid-Western	$15.0	
	i.	North Western	$90.5	
	k.	North Eastern	$31.1	
	l.	Northern	$15.0	
	n.	South	$31.2	
	o.	West Nile	$29.1	
	p.	Densification (primarily Umeme)	$393.3	
		Sub- Total		$866.5
2	**Off -Grid Electrification Financing**			
	a.	Solar PV(PVTMA)	$44.9	
	c.	Mini-grid projects	$8.5	
	c.	Rural power development	$2.0	
		Sub-Total		$55.4
3	**Other**			
	a.	ESP start-up grants	$2.5	
	b.	Customer financing assistance	$17.2	
	c.	Technical assistance	$5.0	
	d.	Training	$5.0	
		Sub-Total		$29.7
		Total		**$951.6**

Not included in this funding plan is the cost of power generation investments, which shall be supported by the UECCCL and private capital sources, contributions-in-aid-of-construction for on-grid electrification projects that are added to REA-approved ESP construction financing, supplementary REA financing to ESPs for electric distribution system replacements and upgrades that are projected to be needed in future years beyond the term of the RESP, and the cost of REA operations which exceed the level of internal REF funds realized from construction account financing reflows. The latter cost will be provided from appropriations requests submitted annually by REA to the MOFPED.

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