UMEME LIMITED 2012 INVESTMENT VERIFICATION REPORT

1 INTRODUCTION

As a key part of the regulatory mandate, Electricity Regulatory Authority (ERA) monitors how licensees are progressing vis-à-vis their investment obligations as part of the Terms and Conditions of the license as provided for in S 47 of the Electricity Act 1999 and the Investment Guidelines 2013 as published by the Authority. This report contains the results of the investment monitoring exercise for Umeme Ltd for the year 2012. The object of this exercise was to verify the size of the investment *undertaken and actually deployed for the benefit of electricity consumers* by December 31, 2012. The verified amounts once approved by the Authority form part of the asset base (rate-base) of Umeme Ltd to which a return on investment is computed into the end-user tariffs over the useful life of those assets.

The verification exercise started in January 2013 and closed in July 2013 effectively covering six months in which there has been detailed consultation with Umeme Ltd Limited and other stakeholders on the progress and information requirements to close the process. During this period, required information was furnished by the Company, and where there have been information gaps such assets have been set aside.

The Uganda Electricity Distribution Company Limited (UEDCL) joined the ERA the verification team by dedicating five officers to the exercise. These were the Principal Internal Auditor, Off-grid Manager, Procurement Officer, Projects Manager and Manager Technical Services. The participation of the UEDCL works under the framework of the lease and assignment agreement in the Umeme Limited Concession, where the UEDCL is the "Asset Owner" i.e. the Lessor and Umeme Limited is the Lessee.

The exercise was approached in two phases:

1. **The deskwork (Off-site)phase**; this included the review of supporting documents to the submitted investments including the procurement process i.e. from the

time the investment was initiated through the procurement process up to when the final commissioning report was submitted or training report attached in areas that necessitated training of staff. The team through this exercise sought to verify:

i) Whether the investment was justified and the appropriate investment made;
ii) Whether there was value for money in the procurement the assets and related materials including of third party (outsourced) contractors where relevant;
iii) Whether what was procured was installed as prescribed and is operational to benefit the consuming public.

2. **The field work (On-site) phase**; this was undertaken to corroborate the deskwork phase results. In this phase, the team further selected schemes from the sample and conducted onsite inspections of the investment made to confirm the existence and the quality of work done on the network and adjoining installations.

   Whereas the deskwork was a necessary first step, in some cases the findings therefrom negated the need to conduct more detailed verification procedures. Where the team proceeded with more detailed verification procedures, onsite field inspections were conducted to obtain sufficient evidence to support recommendations for inclusion within the asset-base earning a Return on Investment (ROI) through the tariff.

Annex 1 to this report includes a detailed summary of the monetary effects of the findings from the verification exercise.

Stakeholders Consultation

As part of the process of concluding the exercise, a Stakeholders' workshop was held in Kampala at Garden City Hotel on July 05, 2013 in which the major institutional stakeholders that included, Economic Policy Research Centre, The National Chamber of Commerce and Industry, The Uganda Manufacturers Association, The Uganda Tea Association, The Ministry of Finance Planning and Economic Development (Privatisation Unit), Uganda Electricity Transmission Company Ltd (UETCL), The Ministry of Energy and Minerals Development (MEMD) and the Private Sector Foundation were in attendance. A summary of the Umeme Ltd submission and the results of the verification process were presented and the Company was asked to respond to the questions that emerged

from the stakeholders. Subsequently, a meeting was held with Umeme Ltd at ERA House seeking to close-out all the hanging issues. While the Company undertook to furnish information on the outstanding queries, not much was received and thus the process had to come to a conclusion within the limitations of the available information.

2 ACRONYMS

Table 1

ABC	Arial Bundled Conductors.
Capex	Capital Expenditure
DOMC	Distribution Operation and Maintenance Costs.
GAAP	Generally Applicable Accounting Principles
Guidelines	Electricity Investment Approval and Verification Guidelines, 2013.
FS	Financial Statements
O&M	Operating and Maintenance Expenditure
ROI	Return on Investment
UEDCL	Uganda Electricity Distribution Company Limited
Ushs	Uganda shillings
Umeme Ltd	Umeme Ltd Limited
US$	US Dollars
UETCL	Uganda Electricity Transmission Company Ltd
SCADA	Supervisory Control and Data Acquisition.

3 VERIFICATION OBJECTIVE

The overriding objective of the exercise was to obtain reasonable assurance that the investment submitted by Umeme Ltd as undertaken and deployed in 2012:

(i) Is fairly stated;
(ii) Qualifies to earn a Return on Investment as per the Electricity Investment Approval and Verification Guidelines; and
(iii) Complied with the acceptable industrial standards in relation to quality and material usage.

4 UMEME LTD 2012 INVESTMENT SUBMISSION

Umeme Ltd submitted a total of Ushs 101.4bn ($40.33m) of capital expenditure on deployed assets for 2012. The submission consists of Ushs 93,925m (US$37.35m) as network assets and Ushs 7,527m (US$2.98m) as non-network assets.

4.1 NETWORK AND NON NETWORK ASSETS

The verification team categorized the assets based on their descriptions in the submission for ease of reference and analysis. Table 2 and Table 3 show the different categories as defined in the Investment approval and verification guidelines where two categories are primarily identified (Network Asset [1] and Non-network Assets [2] respectively) and were the subject of review and verification.

Table 2- Network Assets categorization

UMEME 2012 INVESTMENT VERIFICATION		
NETWORK ASSETS	Amounts	
Category	UgX	%
System Improvements	8,824,491,844	9%
Substation	16,091,757,076	17%
Relocations	203,395,828	0%
Replacements	4,155,914,772	4%
Safety	2,435,367,233	3%
Upgrades	6,042,907,183	6%
Feeders	16,591,286,364	18%
Loss Reduction	1,636,312,181	2%
ABC Projects	6,273,606,708	7%
New Connections	22,328,369,977	24%
Loss Reduction Services	9,341,897,956	10%
	93,925,307,122	

[1] A network Asset must directly result in either an Upgrade to the network or extension of the network Load carrying capacity or Coverage

[2] Non-network assets include tools and equipment, office buildings, motor vehicles and trucks, operational or first time additions and replacement after lifetime, computers and office equipment, furniture, stationary Communication safety wear, CCTV equipment, fire-fighting equipment and specialized equipment. Non-network assets that qualify to earn a return on investment are limited to Specialized Vehicles for instance low wheel loaders and trucks.

Table 3-Non network Asset categorization

UMEME 2012 INVESTMENT VERIFICATION		
NON NETWORK ASSETS	UgX	
	Submission	%
Computers and peripherals	2,060,123,902	27%
Tools and Equipments	2,902,574,954	39%
Buildings	1,042,521,765	14%
Motor vehicles	875,216,562	12%
Management Information System	260,080,119	3%
Furniture	223,373,575	3%
Communication Equipment	156,521,529	2%
Freehold Land	7,000,000	0%
	7,527,412,406	

4.2 PRINCIPLES OF GENERAL APPLICATION TO ALL NETWORK ASSETS.

There are some key principles and precedents which underlie the current regulatory practices with respect to recognition of assets as investments qualifying for ROI. In addition to the provisions of the licenses, the *Generally Acceptable Accounting Principles (GAAP) and the Electricity Investment Approval & Verification Guidelines, 2013* all these serve to amplify the current regulatory practice with respect to investments.

4.2.1 Repairs and Maintenance Poles and Transformers

At the time of concessioning in 2005, the distribution network had fallen into a state of disrepair and was therefore in dire need of refurbishment. During negotiations ahead of the granting of the Umeme Ltd concession, whereas the Company had asked for a higher Distribution Operations and Maintenance Costs (DOMC) based on the need to replace a significant number of poles and transformers under normal prudent utility practices, the Government of Uganda (GoU) took an exception, in which it was agreed that in the first two years of the Umeme Ltd concession (2005 and 2006), **replacement** of poles and transformers would be treated as capital assets and qualify for ROI in the retail tariff.

The purpose of this exception was to avert what would have been a hike in the tariff at the time of Umeme Ltd taking over the concession. This provision therefore ended after 2006, and hence **replacement** of poles and transformers have not been allowable as ROI qualifying assets since, unless they are part of a new network, or constitute an upgrade of network assets.

4.2.2 De-recognition of "general purpose" assets from the base qualifying for Return on Investment.

Amendment No. 4 of Umeme Ltd.'s License for the Supply of Electricity issued by the Authority in February 2012 specifically excludes from the ROI asset base acquisition of computers, motor vehicles (except trucks), furniture and other peripherals that do not directly improve or expand the distribution network.

This is already the practice in the industry in other concessions, e.g. Eskom Uganda limited. The prime objective of the concessions having been to revamp the "System" or "Complex" as opposed to the purchase of desks and chairs, cars and related auxiliary items.

In this regard, such assets are recognized in the year of acquisition consistent with the provisions of the GAAP but are allowed at 100% depreciation in the DOMC for regulatory purposes so as to compensate the Company regarding the cash outlays associated.

4.2.3 Application of Electricity Investment Approval and Verification Guidelines

In March 2013, the ERA published Investment Approval and Verification Guidelines. These Guidelines codify the principles which have been used all along in the verification of investments undertaken in the industry by Umeme Ltd and other licensees. To illustrate, the following are two of these principles:

i. Only assets which have been deployed for the benefit of consumers during the review period can qualify to earn a return through the Retail Tariff. Therefore consistent with the GAAP (IAS 16), Work in Progress (WIP) or, (Assets under Construction) is not subject to depreciation since such assets have not yet begun delivering economic benefits. Likewise in verifying investments for ROI, such Assets are not recognized until when they are actually deployed.

ii. Only assets that upgrade the network beyond its previous performance level can qualify for ROI, thus excluding expenditure incurred simply to maintain the network at its expected performance level. As well consistent with GAAP (IAS16), such additions are not for capitalization. Thus only new extensions to networks or upgrades are recognized for ROI purposes. Invariably, any replacements of Assets before their economic-lives have been extinguished do not qualify for ROI.

These principles reflect the mandate of the Authority to act in the public interest in its review of Umeme Ltd's claims for ROI. The Guidelines have been used in the verification of investment undertaken by Umeme Ltd in 2012.

5 WORK DONE

5.1 COMPARISON WITH APPROVED PLAN FOR 2012 INVESTMENT

The entry point was that the Authority approved an investment plan for Umeme Ltd for 2012 worth US$ 39.49 million (Ushs 99,290m[3]). Principally this means that no investment should have been made in the network unless they had been approved. The Umeme Ltd investment plan for 2012 comprised of:

i. US$33.99m (Ushs 85,461m) for network assets, and

ii. Supplementary DOMC after verification comprising of US$2.0m (Ushs 6,914m) for Non-network assets and US$0.75m for capacity building. Therefore, to uphold the relevance of the investment approval procedure, the recommendations from the verification exercise will be restricted only to the overall totals of what was approved by the Authority in 2012.

This therefore implies that, from the onset and without need for further review:

(i) the investment approved by the Authority for inclusion within the asset base cannot exceed the approved level of US$ 33.99m (Ushs 85,461m), and

[3]US$: Ushs average rate in 2012 = 2,514.32. Source BOU website

(ii) the amount approved by the Authority as expenditure by the company that qualifies for addition to 2013 DOMC cannot exceed the approved level of US$ 2.0m (Ushs 5,028.6m).

5.2 NEW CONNECTIONS

The new connections category amounted to Ushs 22.33bn representing 23% of the submitted investment. Because of its materiality and susceptibility to misstatement, the team verified it using a computer aided procedure/technique i.e. the Umeme Ltd Open Integrated Customer System (ICS) by making the following working assumptions that:

i. All new connections must pay a connection fee. All new connection fees include capital contributions and this is true only for new connections, but not reconnections.

ii. It is possible to track new connections in any given period through the connection dates and capital contribution.

iii. If connection is not made in the period of capital contribution payment, then that amount is reflected in the short term obligations at the reporting date (in this case 31stDec 2012) and thus not a new connection.

iv. However, if connection is made, a meter number will be attached to the customer, a connection date, receipt amount and date of payment will be held in the database for every new connection.

v. New connections that are more than one pole are paid for 100% by the customer and Umeme Ltd does not contribute to creation of that asset and therefore these do not constitute eligible investments for ROI and thus have been left out.

vi. The connection charges for both no pole and one pole new services are standard. Therefore we can build a reasonable expectation of the number of connections and then apply standard cost to the number of one pole or no pole services created for the period under review.

vii. Then a comparison is made of what the team's findings are with the Umeme Ltd submission and investigate any variances that arise in this respect.

Review Tests

i) Sample stock purchases of key cost drivers and confirm that actual costs mirror standard cost profile.
ii) Arrange to have a billing system query done under the direction and in the presence of the verification team. Ensure that the Umeme Ltd submission is corroborated by our database query.
iii) For existence, make a billing cycle printout for Jan 2013 and Dec 2012 to establish that connections are valid.
iv) Perform logical tests on the workbook provided for our use by Umeme Ltd Ltd containing all new connections for 2012. These logical tests include checking Work Request Types, Standard Capital Contributions, Tariff Types and working by elimination to reduce the total connections to only those that result in investment by Umeme Ltd that qualifies for ROI.
v) Checking standard material usage included within the standard cost profile of specific categories of new connections.
vi) Check the standard contractor costs.
vii) Check actual connections in the field for the existence of the materials included in the standard material cost

Obtain assurance about the procurement process for purchases of key material costs drivers for new connections.

Key Findings

i. From the Umeme Ltd new connections submission of 60,646 that were subject to the aforementioned procedure, 846 connections did not return and these represented 1.4% of the examined data. The other variances noted were in connection with capital contributions (49 connections did not have capital contributions and one connection whose capital contribution was very high).
ii. The actual costs incurred in 2012 to purchase selected materials used in the new connections were found to be less than those used in the

standard cost profile to value new connections. Cases where the actual costs were found to be less than the standard costs include:

- 20-80A Single phase Meters,
- 16mmsq. Solidal Cable.

Whereas this is an area that Umeme Ltd is working on, we have received no further information within our set timeframe for additional procedures. This can be revisited in future as when the relevant information or representations are availed by the Company.

iii. From the field verification, the team found out that two of the parts in the standard cost profile, parallel groove clamps and landing brackets, were consistently missing.

iv. The Umeme Ltd submission included an amount for customer contributions which was derived as a product of the standard contribution for a specific category and the number of new connections in that category. The actual summation of customer contributions (which the verification team used) revealed variances with this derivation.

v. The prepayment connections were left untouched, consistent with the decision to handle prepayment as an independent project given its complexity and long-term implications relating to investment in prepayment connections and infrastructure.

vi. The procurement process for the key cost drivers for New Connections (conductor, meters, solidal) was reviewed from which it can be satisfactorily concluded that the processes were fair, competitive and objective realizing value for money from the items purchased. There was evidence in the material plan for the need of these items, approval decisions by the procurement committees, three (03) bidder documents competing for the for the consignments, evaluation reports and award decisions based on lowest price.

Conclusions

Sufficient evidence was therefore obtained from the procedures and informed amendments to the submitted investment in New Connections for variations in:

(i) Total number of connections.

(ii) Actual costs when compared to standard material costs used by Umeme Ltd to value the new connections. *This is to the best of our knowledge at the time of making the final amendments to this report based on available evidence*.

(iii) Usage of materials on new connections made in 2012. Actual connections inspected in the fieldwork phase revealed that some materials in the standard cost profile submitted by the company are not actually used in the field connections.

(iv) Variances between submitted customer contributions and actual customer contributions.

Having made the adjustments as a result of these procedures and verification tests, a total of Ushs 16.158bn was approved for inclusion in the asset base qualifying for ROI.

A summary of the amendments is shown in Table 4.

Table 4 – New Connections

2012 NEW CONNECTIONS REVIEW ANALYSIS	**UgX**	**UgX**
Umeme Submission		22,328,369,977
Amended for:		
Effect of Number of connections	(330,014,406)	
Effect of Variances in actual cost incurred from standard cost, incl. effect of items in standard cost profile not used in actual connections	(5,836,276,579)	
Effect of customer contributions variance	(3,564,338)	
		(6,169,855,323)
Derived value of new connections for inclusion in asset base for ROI		**16,158,514,654**

5.3 SYSTEM IMPROVEMENTS

In this category, 302 schemes were identified with a value of Ushs 8,825m. These schemes were generally in relation to injection of transformers and related LV works. 116 schemes were sampled of which information relating to 54 schemes with a value of Ushs 2,197m was obtained and reviewed. The reviewed schemes were consistently having the same rationale for improvement and the team agreed that this sample would be sufficient to support appropriate conclusions on the population.

Review Tests performed

i. Check the status of the network before improvement. This included status and age of the assets at the time of improvement. Check the procurement process of the material, contractors and any other relevant documentation.

ii. Check the justification for the work done by Umeme Ltd to ensure that it qualifies as investment.

Findings

a) Desk work Phase

From the deskwork review, the team found out that system improvements were driven by the following reasons:

- Load imbalance
- Overload
- Poor protection
- Vandalism

Table 5- Costs incurred per reason.

SYSTEM IMPROVEMENTS SUMMARY	
	UgX
Load imbalance	25,032,539
Overload	848,312,213
Poor protection	100,150,333
Vandalism	218,514,502
Prudent system improvement	573,064,011

i. It was established that only 3 transformers which blew were above the age of 20 years (an industrial benchmark for the useful life of a transformer under prudent utility practices) and the rest of the transformers replaced had not served their useful lives with many lasting under one year.
ii. The findings on the system improvements that were as a result of overload indicate that 14 schemes worth Ushs 573m were done in good time before the existing asset, i.e. transformer blew. The remaining 21 schemes worth Ushs 848m were done after the event, i.e. after blowing due to overload which is not prudent utility practice and thus unacceptable.
iii. It was established that there was no linkage between system improvement and the other reasons given for improvement, i.e. loads imbalance, poor protection and vandalism.
iv. It was established that Umeme Ltd single sourced a supplier and repairer of distribution transformers, i.e. Tanelec. Due to lack of information, it was not possible to verify issues of warranty, selection process like single sourcing of the contractor and comparisons of technical features in the offers that other suppliers could offer.

b) Field work

From the sample, variances were found in the submissions for Kabulenga, Kyotera and Mpanga. For Kabulenga, 28,000m conductor had been submitted centrally to the verified 2,800m on ground a difference of 25,200m.

In Kyotera, there was a double posting of both conductor and poles in the amount of 4,100m and 17 poles respectively. For the Mpanga forest improvement, 1,200m of conductor was not seen on the ground.

Conclusion

i. System improvements for reasons such as vandalism, poor protection and load imbalance should not qualify for ROI.
ii. For the case of the system improvements due to overload, the transformers that were blown prior to the improvement should be discounted as this could have been prevented.
iii. The findings from the sample were extrapolated to the population of System Improvements.

From the aforementioned procedures and considerations, of the submitted investment in systems improvement of Ushs 8,826m, the amount approved was Ushs 2,573m to be included to the asset base qualifying for ROI.

5.4 SUBSTATIONS AND SCADA II.

This category includes SCADA Phase II project and substations worth Ushs 16,092m representing 17% of the total network assets. The team reviewed 21 schemes worth Ushs 14,824m representing 92% of the category total. Of the Ushs 14,824m, SCADA represents Ushs 5,914m whereas Substations amounted to Ushs 8,910m.

The team carried out the following tests to assure themselves that the projects existed, added value to the customers and its procurement process was transparent and competitive.

Tests

(i) Reviewed the Umeme Ltd procurement process to confirm that the process was transparent and competitive.
(ii) Reviewed the available historical data extracted from SCADA itself on the performance of the substation that ought to have been connected by the year ended December 2012.
(iii) Reviewed available reports produced by both ERA and Umeme Ltd from the 2013 statutory inspections.
(iv) Reviewed end of project reports, commissioning reports, hand over reports and training reports.
(v) Physical verification of works done at the SCADA center and selected substations.

Findings:

SCADA

a) Procurement findings:

The verified procurement documents pertaining to the SCADA project were not conclusive. This was a three phase project of:

- Procurement of consultant and training services
- Procurement of the sub-contractor to install the hardware
- Procurement of the hardware components to be installed at the substations.

The findings reveal that this was an ongoing project that was started in 2009 and was in phase II of the installation.

i. Compatibility and continuity circumstances dictated that the procurement be direct/single source.
ii. In the contract document reviewed, there was no clear basis for training (objectives or TORS, Report)- these were presented as verbal narratives to justify the training.
iii. Procurement documents for the purchase of the hardware were available all demonstrating competition, objective selection and fairness.

However, original source procurements documents qualifying this to be an open international tender were not on file. The procurement method used was Request for Proposals in which only three (03) international bidders were shortlisted and invited to compete for the tender.

The choice of method in the circumstances of the threshold values of the SCADA projects is in breach of World Bank (2006) Procurement procedures and Umeme Ltd internal procurement procedures.

b) Technical findings

i. The historical data on the performance of SCADA phase II was not availed and the team was not able to conclusively get to the bottom of this objective/test.
ii. The reviewed reports indicated that even though a component of SCADA had been installed, equipment for the work management Centre, planning and designing department and other work stations were still not assembled by the time of the visit in late May 2013. Also, statutory reports on the Tororo, Masindi, Kasese, Ishasha, Soroti, Kitgum and Rugombwe substations done in February 2013 indicated that installation of SCADA equipment for the interface was ongoing and had not been commissioned.
iii. The other reviewed reports showed that the supplier had been paid. However, there were no commissioning reports, progress reports, and hand over reports.
iv. It was also observed that there were no training reports submitted to Umeme Ltd to confirm the transfer of knowledge to the Umeme Ltd team.

SUBSTATIONS

The following substations were reviewed and verified in the field:

- Tororo substation (Ushs 4.697 bn)
- Mukono substation (Ushs 0.818 bn)
- Njeru substation (Ushs 0.879 bn)
  Kampala South substation(Ushs 1.621 bn)

i) Tororo Substation

The justification for the investment was as a result of frequent faults on the indoor circuit breakers resulting in increased outages and un-reliable power supply in this area. This necessitated the need for the outdoor switchgear Substation.

From the verification exercise, it was confirmed that Umeme Ltd built an outdoor switchgear substation. Details are provided in the report attached.

ii) Mukono Substation review

The justification for this investment was the need for additional transformer capacity to cater for load growth in the area following the failure of the originally installed two (2) 5MVA transformers.

From the verification exercise, it was confirmed that Umeme Ltd installed, tested and commissioned a Crompton Greaves 10/14 MVA, 33/11kv transformer at substation which was operational.

However, there were no oil retainer wall and collection pit for the newly installed transformer hence the project was not environmentally compliant. This was a critical omission and must be attended to urgently.

iii) Njeru Substation review

The justification for this investment was the need for additional transformer capacity to cater for load growth in the area following the failure of the originally installed three (3) 5MVA transformers.

From the verification exercise, it was confirmed that Umeme Ltd installed, tested and commissioned a Crompton Greaves, 10/14 MVA, 33/11kv transformer at the substation and it was in operation.

The team observed that Umeme Ltd decommissioned three (3)5MVA transformers and installed one10/14MVA transformer which defies the technical rationale for load growth. It was also noted that Nile Breweries installed their own separate 10/14MVA transformer in 2010/2011 lowering the load at the node further.

iv) Kampala South Substation review

The justification for the investment was the need for additional transformer capacity to cater for load growth following the failure of the originally installed 2X 5MVA.

From the verification exercise, it was confirmed that Umeme Ltd installed, tested and commissioned a Crompton Greaves, 10/14 MVA, 33/11kV transformer at Kampala South substation and it was in operation.

Conclusions

i. The 2012 investment in the SCADA control system was not in use for the benefit of consumers by the end of 2012. The findings show that this is work in progress and its recognition as investment was deferred to such a time as when it is fully functional.

ii. The investments in Tororo substation and Kampala South substation were approved for recognition for ROI.

iii. Recognition for ROI purposes of the investment relating to both the Mukono and the Njeru 10/14MVA transformers were deferred until the key pending issues revealed by the review are resolved.

From our conclusions above, of the submitted investment in substations of Ushs 16,091.76bn, Ushs 7,585.48m was approved for inclusion within the asset base qualifying for ROI.

5.5 UPGRADES

These were categorized into 387 schemes worth Ushs 6,042.9m as upgrades. This category mainly included planned or unplanned network activity that is intended to address load growth, technical losses in accordance with prudent utility practices. The team reviewed 164 schemes with a value of Ushs 2,533m.

Review Tests :

(i) Check Rationale for upgrades to establish appropriateness

(ii) Check the status of the asset before the upgrade to establish need.

(iii) Check the Asset life for assets upgraded to confirm that the asset had been used for a standard useful life. The assumed useful life for a properly maintained transformer was taken to be 20 years.

(iv) Check the Commissioning report to confirm that the transformer was tested, operational and properly earthed.

Findings

The team found out that the rationale for the upgrades was as a result of the causes summarized in the table 6a. Table 6b shows the age of the assets at the time of upgrade.

Table 6a- Causes Analysis

UPGRADES SUMMARY		
ANALYSIS BY FAULT	**UgX**	**%**
Lightning	185,317,717	7%
Overload		0%
Prudent upgrade	7,721,294	0%
Other	790,901,948	31%
Short circuit	66,132,521	3%
Overvoltage	43,998,537	2%
Internal fault	22,253,901	1%
Detail not given	501,979,731	20%
Vandalism	914,694,723	36%
	2,533,000,372	

Table 6b –Age Analysis

UPGRADES		
AGE ANALYSIS OF REPLACED ASSETS		
Age in Years	Transformers	Proportion
Below 1	5	3%
1	34	21%
2	19	12%
3	13	8%
4	15	9%
5	10	6%
between 6-10	23	14%
Above 10	21	13%
Age not given	22	14%

The transformers upgraded as a result of overload were put in two groups, namely;

i. Those upgraded before the transformers could blow; and
ii. Those that were upgraded after the transformers had blown.

The former category was considered as prudent upgrades.

For the rest of the causes, the rationale given to qualify them as upgrades could not be linked to the definition of an upgrade, e.g. vandalism, lightning, short circuit and over voltage.

iii. It was established that only two out of the sampled 162 transformers were above 20 years of useful life. The remaining 160 transformers representing 99% of the sample had not exhausted their useful life.
iv. For 14% of the sampled transformers, the information submitted was not sufficient to support analysis and these have been added on to the disallowed batches.

Conclusions

i. Within the submitted upgrades, assets that were upgraded for reasons of lightning, overload, short circuit, overvoltage, vandalism were not approved. All of these were avoidable if the company had used prudent maintenance practices.

ii. Where information for analysis was not availed, assets are not recommended for ROI.

iii. Well maintained Transformers should at least be able to serve for their useful (economic) lifecycle. Assets replaced before the estimated useful life (20 years) were not approved for ROI.

iv. The findings from the sample were extrapolated to the population of upgrades category.

From the foregoing conclusions, of the submitted investment in Upgrades of Ushs 6,042.9m, only Ushs18.4m was approved for addition to the asset-base qualifying for ROI.

5.6 REPLACEMENTS

This category of replacements includes among others replacement of blown up and vandalized transformers. The team categorized 353 schemes as replacements with a value of Ushs 4,155.9m. The team sampled 152 schemes of which information relating to 128 schemes with a value of Ushs 2,046.9m was availed and reviewed.

The review deskwork included:

(i) Check Rationale for replacements
(ii) Check the status of the asset before the replacement.
(iii) Check the Asset life for assets to be replaced to confirm that the asset had been used for a standard useful life. The assumed useful life for a properly maintained transformer was assumed to be 20 years.
(iv) Check the Commissioning report to confirm that the transformer was tested, operational and properly earthed.

Findings

From the desk review, the team found out that the rationale for replaced transformers could be summarized in the table 7a.

Table 7a- Reasons for replacements.

REPLACEMENTS REVIEW		
ANALYSIS BY FAULT	**UgX**	%
Lightning	559,616,852	27%
Short Circuit and Load Balancing	226,537,110	11%
Overloading, poor winding	327,268,180	16%
Vandalism	471,510,817	23%
Old Age	62,942,588	3%
Reason not given	399,043,393	19%
	2,046,918,940	

Transformers whose useful life had been reached totaled only Ushs 62.94m representing 3% of this category.

Table 7b-Age of the replaced assets

REPLACEMENTS		
AGE ANALYSIS		
Age in Years	Transformers	Proportion
Below 1	4	3%
1	18	14%
2	8	6%
3	6	5%
4	11	9%
5	5	4%
between 6-10	17	13%
Above 10 < 20	11	9%
Above 20	3	2%
Age not given	45	35%

i. An analysis of the replacements according to cause is shown in Table 7a with lightning and vandalism accounting for 50% of the sample. Other causes are also shown and their proportions.

ii. An analysis of the age of assets in the sample reveals that 41% of the submitted assets in the sample were replaced before they had been used on the network for 5 years, and 63% before 10 years.

iii. For 35% of the sampled transformers, we were not given the detail necessary to make our analysis.

Conclusions

a) Within the submitted replacements, assets that were replaced for reasons of lightning, overload, short circuit, and vandalism have were not approved for ROI because such lie in the ambit of the Company's control if prudent maintenance practices are adhered to.

b) Where information for analysis was not availed, assets were not approved for ROI.

c) The team observed that the three transformers totaling to Ushs 63m that were replaced after the expiry of their useful lives should earn a ROI.

The sampled results were extrapolated to the total replacement population.

From the aforementioned procedures and results obtained, of the submitted investment in Replacements of Ushs 4,155.9m, Ushs 127.8m were approved for inclusion within the asset base qualifying for ROI.

5.7 SAFETY

In this regard, 60 schemes with a value of Ushs 2,435.3m categorized as safety were included in the submission. A sample of 29 schemes with a value of Ushs 2,026.1m representing 83% of the total submission was reviewed.

Review Tests:

i. Check the rationale for safety.
ii. Request for field reports and maintenance schedules associated.
iii. Request for incidence reports and any other triggers for the safety work.

Findings

Table 8.0 - Safety

SAFETY		
WORK DESCRIPTION	**Schemes**	**%**
Replacement of LV poles	26	90%
Replacement of MV poles	2	7%
Install a 50KVA transformer	1	3%
	29	

i. The projects under the Safety category were predominantly pole replacements.
ii. The justification for this work being Safety was not provided and therefore the team was unable to proceed with any interpretation.
iii. The team did not receive the field reports and maintenance schedules for the submitted schemes under this category.
iv. There were no incidence reports or any other triggers for the safety work submitted to the team for review.

Conclusions

In substance, the schemes submitted under this category are of an Operations and maintenance (O&M) nature. Therefore the Safety projects worth Ushs 2,435.3m were not approved for inclusion within the asset base qualifying for ROI.

5.8 RELOCATIONS

In this, category 24 schemes with a value of Ushs 203.4m were identified. A sample of 12 schemes with a value of Ushs 129.8m representing 64% of the submitted category was reviewed.

The verification team looked at the justification for relocation of assets

Findings

Table 9.0- Relocations

RELOCATIONS		
JUSTIFICATION ANALYSIS	**Schemes**	**%**
Vandalism	4	33%
Transformer far from load centre	1	8%
Reason not given	7	58%
	12	

The justification for relocating assets was not given for 58% of the sampled schemes. For those whose reasons were given, they were vandalism and the reduction of distances to load centers.

Conclusions

i. It is the duty of the company to protect the network. Relocation for vandalism should not be rewarded with ROI.

ii. Initial Transformer location decisions should be well analyzed for size and load to be served. Relocation suggests that the initial location decisions may have been sub-optimal and in a nay case, movement of assets should not be submitted for ROI.

iii. The moved assets were still within their useful life and the related operations in mitigating vandalism risk are of O&M nature as opposed to investment.

On the basis of the foregoing, the submitted investment in Relocations of Ushs 203.4m, were not approved for inclusion in asset base qualifying for ROI.

5.9 FEEDERS

This category had 34 schemes as Feeders with a value of Ushs 16,591.2m representing 18% of the network assets submitted. The sample chosen was 29 schemes with a value of Ushs 15,867.7m representing 96% of the total feeders was availed and reviewed.

The verification work included the following:

i) Request for and review the project briefs.

ii) Check the Age of the Feeder to ensure it had served for reasonable useful life before it was refurbished.

iii) Check the status of the asset prior to refurbishment to ensure the asset was being properly monitored and maintained.

iv) Check the justification for the work done by Umeme Ltd to ensure that it qualified as investment.

v) Check the procurement process of the contractors and the materials.

Findings

Table 10-Summary of feeder findings

FEEDERS SUMMARY		
ANALYSIS	**UgX**	**%**
Feeders driven by load growth	8,180,686,604	51%
O&M	401,474,376	3%
Poles replacement		0%
Poles	3,808,054,999	24%
Labour attributable to pole replacement	1,891,780,414	12%
Fieldwork results	79,544,307	0%
Work in Progress	1,545,716,352	10%
Old schemes	140,027,082	1%
	16,047,284,134	

i) The review of the documentation on Feeders was comprehensive. In this category, Ushs 5,699m i.e. 34% of the value of the Feeders reviewed was found to be pole replacement work (Cost of the poles and their labor).

ii) Justifications given were not verifiable for example pre-implementation losses and outages data was not available. Therefore post implementation comparative analysis could not be done. This restricted the team's ability to reliably establish the effect of the 2012 investment on Feeders.

iii) Another noteworthy aspect for Feeders is that contractor costs (labor) were quite high, inordinately outside the industrial expectations of about 30% and at times exceeding 50% of the total project cost. Examples are Kamuli Feeder, Lira Gulu Feeder, Mukono Town Feeder.

iv) Feeders submitted like Waligo – Ntinda, KawandaWaligo representing 9% of the assets submitted under Feeders were still Work in progress.

v) Reviewed desk work showed that work done on particular feeders like replacement of rotten poles is of O&M nature and these represented (2%) of the submitted category (see Appendix).

vi) The fieldwork inspections revealed material variances between the submission and the actual assets in the field, valued at Ushs 79m.

- The methodology of determining the contractor costs was not submitted by Umeme Ltd. Best practice requires that there be an internal system of measuring or breakdown of the reasonableness of the proposed costs.

- The team through the desk review observed that rightly treated poles have 40 years of life span; Umeme Ltd had a contract with the supplier that gives a guarantee of 25 years.

Conclusions

i. In principle, Pole Replacement works were not approved for ROI.
ii. Labor costs attributable to pole replacement work have also not been recommended for ROI.
iii. Work in progress represents assets that have not been brought fully into use for the benefit of consumers. Therefore, these assets were not approved for ROI.
iv. Field work variances, O&M expenditure have not been approved.
v. Poles replaced before the age of 25 years should still be covered under guarantee and could not attract a ROI.

From these procedures and the findings therefrom, of the submitted investment on Feeders of Ushs 16,591.2m, Ushs 8,724.7m was approved for inclusion within the asset base qualifying for ROI.

5.10 LOSS REDUCTION PROJECTS

Loss reduction projects were categorized from the submission to include primarily ABC projects worth Ushs 7,693m and some investments submitted retrospectively relating to previous periods prior to 2012 valued at Ushs 113.8m.

For the ABC projects, procedures executed were as follows:

Review Tests:

i) Check the justification for the work done by Umeme Ltd to ensure that it qualified as investment.
ii) Review the procurement process for the key cost drivers to assure the team of value for money.
iii) Check project progress reports.
iv) Validate what was actually done by physical inspection.

Findings

i) The ABC projects were inspected and also reviewed. The ABC projects existed and the quality of work on them was acceptable.
ii) The team noted that investments undertaken in periods prior to 2012 had been submitted together with 2012 investment, especially as some of the amounts relate to investments already approved in previous years.

Conclusions

i. The verification team found this category of assets to be qualifying network assets, as a loss reduction initiative for both commercial and technical losses.
ii. The investments relating to periods prior to 2012 have been set aside for now, pending clarification.

From the foregoing, of the Ushs 7,909m submitted by the Company as investment in Loss Reduction Services in 2012, was approved is Ushs7,796m for recognition as investment earning ROI.

5.11 LOSS REDUCTION SERVICES INVESTMENT

This was primarily submitted in the categories of:

(i) Prepayment investment(Ushs 4.9bn)
(ii) Metering projects (Ushs 4.4bn)

a) The prepayment investment

This will be the subject of an outsourced consultancy which will provide the assurance we need for this investment.

b) Metering projects

The team conducted a review of all the metering projects submitted.

Findings

i. The desk review of the metering projects revealed that they are essentially meter replacement projects.

Conclusions

i. The replacement and securing of faulty meters of similar technology is essentially O&M expenditure. So the investment in metering projects is set aside in principle.

ii. The prepayment investment will be the subject of an outsourced consultancy which will provide the assurance we need for this investment. Therefore, for now, it is recognized for ROI until we can get the assurance we need. After the consultancy is concluded, the recommended position for ROI purposes will have retrospective effect.

From the foregoing, of the Ushs 9,341.9m submitted by Umeme Ltd as investment in Loss Reduction Services in 2012, was approved at Ushs4, 921.6m (prepayment) for recognition as investment to earn ROI.

5.12 NON- NETWORK ASSETS

The non-network assets represented 7.4% of the total asset investment portfolio that Umeme Ltd submitted.

The Authority approved, subject to verification, an amount of US$2.75m (Ushs 6,914.38m) comprising Non-network assets. The submission shows a variance of Ushs 7.527m spent representing a 9% over expenditure against the approved plan. No subsidiary approval was obtained for the excess or any additional justification.

Table 11 shows the breakdown of the non-network asset categories that the verification team deduced from the submission.

Table 11: Breakdown of non-network assets

		Notes
NON NETWORK ASSETS	UgX	
Computers and peripherals	2,060,123,902	**i**
Tools and Equipments	2,902,574,954	**ii**
Buildings	1,042,521,765	**iii**
Motor cycles	875,216,562	**iv**
Management Information System	260,080,119	**v**
Furniture	223,373,575	**vi**
Communication Equipment	156,521,529	**vii**
Freehold Land	7,000,000	**viii**
	7,527,412,406	

Notes

i. Computers and peripherals consisted of computers, printers, switches, routers, power backup facilities.
ii. Tools and Equipment included: Operational tools e.g. Mobile mappers, crimping tools, Insulating sticks and Office Machinery, e.g. fireproof safes, TVs, Fridges, Coin counting machines.
iii. Buildings included; Partitioning of Umeme Ltd offices, sanitary facilities, access roads at substations, pole platform construction, among others.
iv. Motor cycles included: Generator and auto transfer switch, motor cycles,
v. Management Information system included: IT payment interface platform for postpaid customers.
vi. Furniture included: Chairs, Desks, Noticeboards, Cabinets, and Workstations.
vii. Communication Equipment covers various devices including IPads, Blackberry phones, and Cisco IP phones.
viii. Freehold Land relates to extra land for Waligo substation.

Review Tests:

i. Check the submission against the approved plan for Non network assets.
ii. Check the detail of the submitted non network assets against the standard of prudence in the incurrence of operational cost.

Findings

i. The approved plan of non-network assets was less than the Umeme Ltd submission for this category of assets.

ii. The Freehold Land relates to Waligo substation which is still work in progress.

iii. The review of the detail of the non-network assets revealed some expenditure on items which go beyond prudent incurred operational cost as understood by the review team. This relates for example to the expenditure on IPADs.

Conclusions

i. In the absence of supplementary approvals by the Authority, the submission should be capped at the level previously approved by the Authority.

From the foregoing, of the Ushs7, 527.4m submitted by Umeme Ltd as supplementary DOMC in 2012, Ushs 5,028.6m was approved for inclusion within Umeme Ltd.'s 2013 DOMC.

6 SUBSIDIARY ANALYSIS AND INTERACTION WITH THE COMPANY

During the stakeholder consultative workshop of July 05, 2013, the ERA team presented the details of the verification findings and the Company was given an opportunity to respond to the findings and the scope of disallowed items. Two major issues emerged:-

There was a significant proportion of monies initially submitted as investments but dis-allowed by ERA as constituting Distribution Operations and Maintenance Costs (DOMC) mainly with respect to poles and transformer replacements in various categories of investment. However, the Company has argued that its DOMC allowance has a limited volume of poles and transformers and to the extent the allowance has been exceeded, the recourse is investment.

ERA clarified that exhaustion of DOMC allowance of any category does not change the agreed classification of assets. The ERA Team moved on to carry out an analytical review of the Company's DOMC performance as shown in Annex-3

This analysis indicates that there was a total over expenditure of Ushs 12,494m on all DOMC categories. An in-depth review of the Repairs and Maintenance category of the DOMC indicates that whilst Ushs 15,100m was allowed, the outturn was Ushs 18,059m and thus an over expenditure of Ushs 2,959m. This is less than 40% of the total claims on account of poles and transformers and other

adjoining replacements. (Claims on Poles/Transformers Ushs 12,260m). There were significant over expenditure on all other categories of DOMC that has nothing to do with poles and transformers.

It is ERA's considered opinion that the DOMC allowances as given in the agreed targets may not always even out year-on-year but rather over the seven year horizon. There could be over and under expenditures around the average allowance. Therefore one year of over expenditure cannot be a crisis. If the Company has serious reasons to doubt the adequacy of the DOMC provisions, a detailed submission with proper justification has to be submitted to the Authority for consideration.

There have also been claims of investment on account of Vandalism, Ushs 4,200m. ERA advice to the Company has been that the assets should have been insured in accordance with the Electricity Act. The Electricity Act S. 33 (4) (b) states that "*The Authority shall require the applicant to take the necessary insurance policies to protect against liabilities that may arise as a result of activities done under the licence*". There is no reason why such known risks cannot be insured against.

In addition, the cost of insurance is a fraction of the asset base usually in the region of 2%-5%, this is a lesser burden to the consumer than shouldering the risk of 100% replacement of vandalised assets plus the ROI component. The Company has indicated that they are in discussion on this matter with their insurance advisors. All the insurance requirements applied for during the seven-year review exercise were granted by the Authority without adjustments.

7 CONCLUSIONS

The foregoing analysis has been based on the best available information as provided by the Company. This exercise that begun in January 2013 was closed in July 2013, a period of six months in which the Company has been given adequate time to furnish any information as required. A significant part of this delay has been occasioned by the delays in the company submitting information. It is expected that going forward, information will be supplied in a timely manner.

The conclusions herein can be revisited at the next cycle if or when any further/additional evidence is produced to support any residual claims. The following were approved by the Authority at its 220th Meeting at ERA House Board Room on Wednesday July 31, 2013:-

i. **an addition for 2012 investment to Umeme Ltd.'s asset base qualifying for ROI of Ushs 54,157,135,228 (US$21,539,476) as detailed in the attached Annex 1.**

ii. **A supplementary addition of Ushs 5,028,638,000 (US$2,000,000) to the 2013 allowance for DOMC for Umeme Ltd arising out of non-network assets acquired during the year.**

ANNEX - 1

ANNEX			
UMEME 2012 INVESTMENT VERIFICATION			
NETWORK ASSETS			
Category	Submitted Amounts	Review Amendments	Current ROI Recommendation
	UgX	UgX	UgX
New Connections			
Other	22,156,366,453	(6,169,855,323)	15,986,511,130
Prepayment*	172,003,524	0	172,003,524
Feeders	16,591,286,364	(7,866,597,530)	8,724,688,834
Substations	16,091,757,076	(8,506,279,791)	7,585,477,285
Loss Reduction Services	9,341,897,956	(4,420,250,440)	4,921,647,516
System Improvements	8,824,491,844	-	8,824,491,844
Loss Reduction Projects	7,909,918,889	(113,818,302)	7,796,100,587
Upgrades	6,042,907,183	(6,024,486,711)	18,420,472
Replacements	4,155,914,772	(4,028,120,737)	127,794,035
Safety	2,435,367,233	(2,435,367,233)	0
Relocations	203,395,828	(203,395,828)	0
Totals	**93,925,307,122**	**(39,768,171,894)**	**54,157,135,228**
* Investment in the prepayment projects will be reviewed through an outsourced consultancy.			

ANNEX -2

NON NETWORK ASSETS			
Category	Submitted Amounts	Review Amendments	Current DOMC inclusion Recommendation
	UgX	UgX	UgX
Tools and Equipments	2,902,574,954	(168,519,202)	2,734,055,752
Computers and peripherals	2,060,123,902	-	2,060,123,902
Buildings	1,042,521,765	(58,100,000)	984,421,765
Motorcycles	875,216,562	-	875,216,562
Management Information System	260,080,119	(50,207,619)	209,872,500
Furniture	223,373,575	(223,373,575)	0
Communication Equipment, Office Equipment	156,521,529	(48,371,519)	108,150,010
Freehold Land	7,000,000	(7,000,000)	-
Totals	**7,527,412,406**	**(555,571,915)**	**6,971,840,491**
Limited to Authority approval for 2012 non-network assets for inclusion within DOMC		**(1,943,200,491)**	
	7,527,412,406	**(2,498,772,406)**	**5,028,640,000**

ANNEX -3

UMEME ALLOWED DOMC AND ACTUAL OUTTURN 2012

	2012 APPROVED DOMC (Shs '000)	2012 DOMC OUTTURN(Shs '000)	Variance (Shs '000')
Staff Costs	36,567,153	39,403,000	(2,835,847)
Other Staff Costs	7,639,834	11,282,000	(3,642,166)
Transport Costs	6,631,632	7,553,000	(921,368)
Repair & Maintenance	15,100,000	18,059,000	(2,959,000)
Administration	29,677,980	32,380,000	(2,702,020)
Insurance	2,767,445	4,622,000	(1,854,555)
AMR	1,895,635	-	1,895,635
Pre- payment	525,179	-	525,179
Total	**100,804,858**	**113,299,000**	**(12,494,142)**
Exchange rate	2,373	2,373	2,373
Total in USD '000'	**42,489**	**47,755**	**(5,266)**