MINUTES OF ELECTRIFICATION WORKING GROUP MEETING
MOUNT SOCHE HOTEL, BLANTYRE, MALAWI
TUE 6 – THU 8 MAY 2008

Electrification Work Group (EWG) Members Attendance

Name	Organization	Email
Dr. Hendri Geldenhuys (Chair person)	ESKOM(SA)	Geldenhuys.Hendri@eskom.co.za
Stephen Delport	AMEU(SA)	delportst@ekurhuleni.com
Tankiso Motsoikha	LEC	motsoikha@lec.co.ls
Victor Munthali	ESCOM (MW)	vmunthali@escommw.com
David Mbewe	ESCOM(MW)	dmbewe@escommw.com
Lytton Moyo	ESCOM Ltd	lmoyo@escommw.com
Kennedy Sichone	ZESCO	ksichone@zesco.co.zm
Mike Mukuka	ZESCO	mmukuka@zesco.co.zm
James Mtekafeka	ESCOM	jmkafeka@escommw.com
Mabika Mabiala	SNEL DR CONGO	dedemabi@yaho.fr

Electrification Work Group (EWG) Members Apologies

Name	Organization	Email
Memory Zvipore	REA ZIMBABWE	memzvipore@yahoo.com

OPENING AND WELCOME

Dr Hendri Geldenhuys opened the meeting and welcomed delegates. He made an apology for the previous chair person, Memory Zvipore,REA Zimbabwe who was unable to attend and therefore requested him as the Deputy Chairperson to convene this meeting.

APPROVAL OF MINUTES OF PREVIOUS MEETING HELD IN ZAMBIA AT THE VICTORIA FALLS 23 – 24 SEPTEMBER 2007

Approval of the minutes of the previous meeting of the Electrification Work Group held at Zambia 23-24 September 2007 at Victoria Falls, Kennedy Sichone proposed that the minutes be approved and Stephen Delport seconded his proposal. The minutes were accepted.

MATTERS ARISING FROM THE MEETING HELD IN ZAMBIA

All members were previously requested to submit a short brief on information that would best describe their current "low cost" electrification practices. Although this might not necessary be the most cost effective way, the aim was only to share information which will be consolidated into a report by E Ruto. In the absence of Miss E Ruto from KPLC this matter was not further dealt with.

ISSUES RAISED BY MEMBERS NOT COVERED IN WORK PLAN

The convener requested that members should raise issues which may not be covered in the work plan. The following were then noted:-

Specific responsibilities, change of designs – cost implications standards used particular MV Lines, low cost project specific design standard, profitability of supplying rural sections of communities, clear mandate of EWG, shortage of generation capacity to balanced the systems on a sustainable manner, energy saving technology, minimum safety and quality of supply, standard and design not specifically related to end cost implications, marketing of electricity once available, planning and design e.g. Planning and Design: no design should be considered in isolation. The planner should take into account the relationship between the area to be supplied and adjacent supply areas, proposed future developments and environmental considerations.

When applying the guideline in individual schemes, it may be necessary to take into account all local conditions and total life cycle cost (for example, capital outlay and the upgrading of operational and maintenance requirements).

Broader issues e.g. metering, tariffs, marketing etc to be considered

REPORT BACK ON SWER TRAINING COURSE HELD IN SOUTH AFRICA

Hendri Geldenhuys reports back by means of a slide show presenting action photo's taken with all who attended the 3 day training in November 2007 in the Eastern Cape province of South Africa. A DVD was produced and snaps was also presented to the members. The whole process was documented although probably cumbersome to long. Hendri reports that they will have a re-look at the video with the aim to possibly compile and re-record a shorter version with improved quality. The long unedited version is available on request from Hendri Geldenhuys.

Tankiso suggested that the EWG should conclude on the matter of SWER training as it has been sufficiently dealt with. This technology option should now be escalated to the Standardization committee for finalization as a standard. Hendri mentioned that Eskom have a comprehensive detailed SWER standard which may be used as a base document. Hendri's proposal were accepted by all members present.

SWER IN OTHER COUNTRIES

Hendri Geldenhuys presented general information of SWER systems in Botswana and Namibia. He reminded members of that proper planning and dedicated commitment is crucial!

There are some perceptions that SWER is a 3rd class solution because there is only one "WIRE" whilst everybody else is getting 3 wires. However the SWER system is not technically inferior and there is NOTHING wrong about it. SWER actually works very well.

Hendri further also explains the application and meaning of dual phase supplies (+230volt 0 -230volt).

KENNEDY SICHONE: REPORTS ON CAPACITIVE VOLTAGE TRANSFORMERS (CVT) FOR SUPPLY SMALL LOADS TO CUSTOMERS

The following points were covered in his presentation:-

- Investigation for the use of capacitive voltage transformers for single phase supplies to small loads in remote settlements along power lines
- Theory of CVT's at substations, limit of supply from the CVT, Ferro-resonance problem, Ferro-resonance suppression, what does it cost (HV) equipment only, other key benefits of CVT substation technology, applicability of CVT substations, conclusions with special features for low cost electrification.
- Hendri Geldenhuys enlightened the members on some more detail on Capacitive Coupled Substations piloted by Eskom in South Africa and CVT substation technology. He explained that Capacitive Coupled Substations are inherently unstable when **"large motors"** are connected to it. However it might be quite suitable for low cost electrification consumers. An Eskom pilot project, under a 275kV line, is shared with members and complimented with a slide show.
- Conclusion this technology should be further research as it may have definite potential as a low cost electrification option when HV lines are in the vicinity available. Further research findings – will be shared as lesson are learned from the research ongoing. At transmission level the security of supply may not be viewed by the system operator as beneficial to the system but rather as a problem. However practically CVT technology applications can be a viable solution especially for small load supplies 6-12kVA.

- However careful consideration should be given to specialized equipment when it is a “one of a kind installation”. At this stage specialist consultant will have to be contacted should any member would want to obtain further information for such a project. It is agreed and accepted that this cannot be expected from the PIESA EWG as an assignment.

LOW COST ELECTRIFICATION FUNDING MECHANISMS

Various members shared there electrification current funding mechanism and programs with one another.

OPTIMUM LOW COST ELECTRIFICATION PRACTICES WITH THE AIM TO MAKE FUTURE RECOMMENDATION

Various members briefly shared there general practices regarding low cost electrification with one another.

THEFT MITIGATION

Members briefly shared some practical steps implemented to mitigate the affect of theft of electricity from there networks.

TERMS OF REFERENCE (TOR) FOR THE EWG

As far as it could be establish no previous TOR are available for the EWG. The convener request member to raised all issues that may be required to be incorporated in the TOR. The following general points were noted by members

Access to electrification
ADMD, load factor, design parameters
Appropriate technology
Common regional problems and practices
Connection rates
Consumption data statistics (HV – MV Customers)
Customer connection methods
Define uniform calculation methods to determine access to electricity
Design guidelines Substations Lines,
Earthing practices
Electrification access policies and methods

Electrification program management
Funding of electrification
Gather , review, experiences that have success, practical
Inspection and commissioning
Interaction with suppliers with respect to new technology
Investigate and recommend
Lines
Low cost electrification of rural and urban areas
Metering, billing, loss reduction (Non technical lossesWG)
Overall master planning
Periodic report to PIESA Board
Planning (long term) electrification process, share regional experiences
Renewable energy resources
Safety and quality
Share Electrification Technologies in region
Substation design HV & MV & LV
Technical losses (method of determination and reduction)
Vandalism
Village cooperatives
Way leaves and servitudes

After in depth deliberations the following was summarized to form the "Term of Reference" as reference for future meetings of the Electrification Work Group

TERMS OF REFERENCE (TOR) FOR THE ELECTRIFICATION WORK GROUP

OBJECTIVE

Improve access to electricity in both rural and urban areas by considering:-

- Cost effective means
- Safety
- Quality

SCOPE OF WORK

A. Electrification Policies

- Define uniform calculation methods to determine access to electricity
- Village cooperatives
- Funding

B. Electrification Master Plan

- Processes
- Spacial information for planning purposes
- Network planning
- Consumption data
- Way leaves and servitudes

C. Electrification Implementation Plan/Program management

D. Network Technologies

- 33kV and below to the point of supply
- Earthing practices
- Quality inspections and commissioning
- Construction practices
- Vandalism
- Interaction with suppliers

E. Non Grid Technologies

- Renewable energy etc

F. Technical losses

- Method of determining
- Reduction

G. Non-Technical losses

- Note "Non-Technical Losses" will not be dealt with by the EWG as there is another PIESA WG dealing with it.

METHODOLGY

- "Detailed" standards will be referred to the standardization WG
- Gather, review, Investigate, recommend, share experiences that was successful
- Share electrification technologies in PIESA region
- Developed appropriate regional solutions and practices
- Annually report to PIESA Board

WORK PLAN FOR THE ELECTRIFICATION WORK GROUP

NB!! COGNISANCE SHOULD BE TAKEN THAT THE WORK PLAN WAS CAPTURED SEPARATELY FROM THE MINUTES. HOWEVER IT MUST BE READ INCONJUNCTION WITH THIS MINUTES AS IT FORMS AN INTEGRAL PART OF THE ACTIVITIES THAT TOOK PLACE AT THE MEETING HELD.

NEXT EWG MEETING

A possible date for the next EWG was suggested to be held to coincide with the next annual general board meeting date to be confirmed by secretariat Paul van Niekerk ???? 2008 in ????

CLOSING REMARKS & WORD OF THANKS

The Convener thanked all group members, for attending the meeting and for their contributions made. He expressed his real appreciation towards all members.