ENERGY EXPERTS SHARE BEST PRACTICES ON LOSS REDUCTION & REVENUE PROTECTION

METERING, BILLING & LOSS REDUCTION: A WORKSHOP FOR ETHIOPIAN ELECTRIC UTILITY
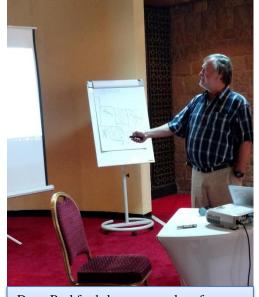
ADDIS ABABA, ETHIOPIA – Executives from the Ethiopian Electric Utility (EEU) participated in a USAID- and Power Africa-funded workshop that focused on improving utility performance and solvency. The participants met with their peers from utilities, and meter and software manufacturers to learn about technologies and techniques for improving distribution utility performance. The participants discussed a range of issues, including strategies for reducing technical losses, combatting electricity pilferage and meter tampering, and new information and data analysis technologies. The participants also learned about the importance of customer service and proactively engaging the community to achieve loss reduction targets and protect the utility's revenue over the long-term. The utilities that have made the greatest improvements in electricity reliability and energy efficiency have learned the importance of loss reduction, customer engagement, and revenue protection. The workshop highlighted three critical topics: the importance of loss reduction to system stabilization; the relationship among smart metering, AMI and revenue enhancement; –and billing and collections best practices, prepayment systems and new technologies.

REDUCTION OF TECHNICAL LOSSES – TECHNOLOGIES AND SOLUTIONS

Masresha Asfaw from EEU discussed the status of Ethiopia's distribution system, and the utility's loss reduction programs, and billing system. Current challenges at EEU include theft, meter tampering, aging, obsolete or faulty transformers, switch gear, and other distribution equipment. Francisco Arenas from Schneider Electric discussed SCADA systems, while Wendel Peligro from Visayan Electric Company (VECO) shared VECO's experience in the Philippines utilizing data and technology (including distribution automation, SCADA and distribution management systems or DMS) combined with customer input to prioritize maintenance projects and distribution system improvements. By focusing investments on specific upgrades – from GIS solutions on crew vehicles to undergrounding of selected distribution lines – VECO has been able to utilize data to address customer concerns and make more impactful improvements. Some of these investments aim to improve asset reliability and ease of service restoration after extreme weather, while others seek to limit load shedding or, in the case of undergrounding, make pilferage and wildlife-caused faults less likely.

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COMBATTING NON-TECHNICAL LOSSES – BILLING AND COLLECTION BEST PRACTICES

A big challenge facing EEU is its chronic commercial or non-technical losses in its distribution networks. Commercial losses are broadly grouped into two categories--unbilled energy losses, and billable, but uncollectable energy usage. Unbilled energy losses are typically the result of theft in one form or another. Mr. Doug Bashford from ESKOM shared photographs of various forms of meter tampering and bypassing which ranged from the crude and obvious, to the ingenious and difficult to detect. Mr. Wendel Peligro from the Visayan Electric Company (VECO) in the Philippines gave different examples of how to combat electricity theft. He stressed proactively engaging and educating the community, and prosecuting those who continue to steal electricity. He said utilities in the Philippines publish the names and photographs of convicted thieves in local news media, alongside apologies from the parties in question, which has helped create a social stigma against electricity theft. Mr. Bashford emphasized the need to be persistent in making the case – both to the public and to the courts –for why electricity theft is not a "victimless crime," and how the utility's inability to collect revenue for its services makes it nearly impossible to provide reliable electric power.

Doug Bashford shares examples of tampered meters in South Africa.

Speaking from experiences in South Africa, Mr. Bashford also reminded participants that unbilled losses are not unique to low-income neighborhoods, nor are neighborhood residents always directly responsible. Eskom had installed meters designed to fail in the "free service" mode. When this occurred, residents receiving free electricity didn't disclose asmuch. Mr. Bashford urged regular meter inspections and maintenance. He said the more innovative methods of bypassing a meter are beyond the technical abilities of most customers, and that meter readers aided customers in stealing electricity for a fee. Eskom has curbed employee dishonesty through a combination of personnel policies, outreach, and technical solutions like meter reading devices that must be within a specified distance of the meter in order to input data.

The workshop participants were keenly interested in VECO's lessons learned: the need for community outreach/buy-in; the best way to utilize remote vending machines for prepaid systems; the best way to utilize mobile technologies for billing systems; and the need to pilot new meter systems and fully evaluate them before roll out on a large scale. Both Mr. Peligro and Mr. Bashford recommended penalizing late payments and disconnecting customers who routinely default on payments.

INTEGRATING SMART GRID TECHNOLOGIES

Many of the participants wanted to introduce various smart grid technologies to EEU's distribution system or upgrade the existing system to increase efficiency, response time, and central control of dispatch and distribution management. Many questions focused on the benefits of pre-paid metering systems and the various ways that utilities can accept payment. Other questions focused on technical capabilities and features of various systems. For example, participants and presenters discussed the benefits of utilizing Automated Metering Infrastructure (AMI), handheld meter reading devices, supervisory control and data acquisition (SCADA), and other smart grid technologies. In particular, many participants were interested in collecting and analyzing data about their customers and how they use electricity, which is rarely done in East Africa, but which could improve a utility's ability to manage its network efficiently, avoid outages, and better plan for expansions or upgrades.

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RESULTS & RECOMMENDATIONS

The panelists recommended that EEU implement staff training programs for meter maintenance and meter reading. Additionally, the panelists recommended that EEU develop standardized processes throughout the distribution chain. Several of the panelists also recommended that EEU work to digitize their network on GIS as a first step towards modernizing and upgrading its system.

The workshop participants all agreed meter maintenance and inspection programs need to be implemented as a first step to generating more revenue for the utility. They agreed that combatting meter reader corruption and targeting inspection programs in areas of high probability for theft and meter tampering is a priority. Participants also indicated that they would share VECO's experience and best practices on billing systems and customer engagement with their colleagues. Moving forward the participants would like more in-depth information on outage management, reliability, and service restoration.

Speakers at the workshop discuss their recommendations for EEU. (L-R) Doug Bashford, Wendel Peligro, Francisco Arenas, Yemi Mekonnen (Power Africa Transaction Advisor)

SPEAKERS

Douglas Bashford, Eskom
Wendel Peligro, Visayan Electric Company (VECO)
Ali Zain, E.ON
Francisco Arenas, Schneider Electric

WORKSHOP PARTICIPANTS

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2. Abdu Mohammed
3. Adyris Merrd
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10. Ferid Abduselam
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12. Frew Gezahegn
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14. Gedion Abera
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25. Mulugeta Gashaw
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