



Summary of Proceedings

INTRODUCTION

The **Sector Reform and Utility Commercialization (SRUC) Task Order**, funded by the U.S. Agency for International Development (USAID) and implemented by Deloitte Consulting LLP, aims to promote utility commercialization and equitable, effective reforms that will enhance the financial viability and long term sustainability of developing countries' electricity systems.

During a USAID SRUC team visit to Jamaica in late 2014, Office of Utility Regulation (OUR) and Jamaican Public Service Company (JPS Co Ltd, or JPS) requested assistance to better understand how power utilities and regulators in similar environments have handled and regulated issues related to electricity theft, electricity provision to base-of pyramid households, community outreach and engagement methods, as well as other information on industry best practices they can utilize in the Jamaican context.

To this end, the USAID SRUC team organized the Jamaica Loss Reduction Workshop, which took place from June 9th, 2015 to June 11th, 2015 in partnership with the World Bank ESMAP. The workshop focused on international best practices for prioritizing losses, non-technical loss reduction in low-income communities, and effective approaches by regulators and utility companies to regularize customers to reduce theft and improve revenues. The Workshop invited delegations from six countries, including representatives from Brazil, Chile, Colombia, the Dominican Republic, India, and Kenya, who all shared their experiences in loss reduction, community engagement and utility performance improvement.

There were approximately 45 attendees from JPS and OUR and about 60 total attendees from organizations and companies working on the Jamaica power sector. The Workshop welcomed opening remarks from the Honorable Philip Paulwell of the Ministry of Science, Technology, and Energy, and Mines (MSTEM); Kelly Tomblin, President/CEO of JPS Co, Ltd.; Albert Gordon, Director General of OUR; and Denise Herbol, Mission Director of USAID/Jamaica.

THEMES FROM THE INTERNATIONAL PRESENTATIONS

The Workshop included participants from the following organizations:

Country	Organization	Entity
Brazil	ANEEL	Regulator
	AES Eletropaulo	Utility
Chile	SEC	Regulator
	Chilectra	Utility
Colombia	Codensa	Utility
Dominican Republic	Dominican Corporation of State Electrical Companies (CDEEE)	Regulator
	Ede Este	Utility
India	Tata Power Delhi Distribution Ltd. (TTPDL)	Utility
Jamaica	Office of Utility Regulations (OUR)	Regulator
	Jamaican Public Service Company (JPS)	Utility
Kenya	Energy Regulatory Commission (ERC)	Regulator
	Kenya Power	Utility

Representatives from the various countries presented on a wide variety of areas related to loss reduction from an electric utility companies' and a regulators' perspective:

- Regulatory perspective:
 - Economic regulation in the power sector within the various countries
 - Tariff calculation and classification of customer groups
 - Classification and calculation of technical, non-technical, and commercial losses
 - Benchmarking and targeting for loss reduction
- Utility perspective:
 - The variations in utility market size, consumption habits, and losses between countries
 - History of the utility sector and electricity losses



- Strategies for reducing losses
- Interventions and strategies for achieving loss reduction
- Lessons learned from successful and unsuccessful interventions

TAKEAWAYS FROM THE WORKSHOP

The presentations included common themes about electricity loss reduction across countries and contexts:

- **Electricity losses can be controlled and sustained** when the utility, the regulator, the policy makers, and the populace agree on the importance of loss reduction and the appropriateness of methods to bring loss levels down sustainably.
- Successful loss reduction is an iterative process that is the result of a planned progression of factors, which can take significant time, investment and dedication to fully come to fruition. While the Workshop's attending international loss reduction managers illustrated that the majority of the actual decrease in their losses occurred over the course of 3-6 years, the overall loss reduction effort normally required an additional 5-10 years of policy, legal, regulatory, and utility investments to enable sustained loss reduction. International experience illustrated a **significant upfront capital investment and long-term timeframe to reduce losses to an acceptable level** (most cases showed 10 to 15 years from the start of initiatives to sustained, low-level losses).
- **Tariff formulae must include a target for system losses that allows a reasonable return to the company while incentivizing improvements in loss reduction, regularization, and operational performance.** International utility and regulator participants presented targets for system losses that were typically within 5-10% of actual losses. For example, Tata Power's original target for losses in 2003 was 45.35% while actual losses in the preceding year were 47.79% and Kenya Power's target was 16.6% for 2014 while actual losses in the preceding year were 18.8%.
- **A viable strategy for loss reduction needs achievable targets for the short-term (3-6 years) and long term (6-10 years), a clearly prioritized action plan with associated investments, and coordination** between the government, utility, and regulator. Most international utility company participants presented a long-term plan for loss reduction to the regulator and had regular meetings on progress. The international regulators played a key role in helping shape these plans, approving loss-reduction activities and providing positive incentives for loss-reduction.
- **Political will is a pre-requisite to substantial improvements in electricity losses.** Given both the cost and social value of providing electricity to poor citizens, the government needs to play a role funding these efforts. Government or municipal agencies need to be willing to help subsidize the cost of electricity consumption in the low-income communities. This can manifest itself in a variety of ways, including cross-subsidies on tariffs, direct subsidies to end-users through government programs, contribution of government funds to utility regularization and anti-theft activities, and



increased stringency and effectiveness of anti-theft laws. Government can also show political will for loss reduction by paying their electricity bills in a timely manner or by using pre-paid meters.

- **Sustained and tailored customer engagement is integrally important** for regularization efforts in low-income, inner city areas, which are the most challenging for loss reduction. Programs in low-income areas are successful when they are tailored to the needs of the customer. Most started by building positive points of contact, establishing a viable process for customer dialogue, empowering consumers with resources and information about the benefits of metered electricity, and enabling customers to pay their bills. This may include adjustments to electricity tariffs and/or billing policies to suit consumers who are unemployed or with irregular income streams. Although they are not a pre-requisite for success, many attending international loss reduction managers discussed the use of prepayment meters as a means to assist low income consumers to better manage their consumption and match their payments to their income streams. Prepaid meters, however, are not a “silver bullet,” nor are they immune to theft.
- **Rigorous enforcement mechanisms and ability to appropriately discipline electricity theft helped create a culture of payment**, especially in middle income areas and with large customers. Utility companies often utilized public outlets, such as newspapers and nightly news, to expose illegal consumers and put social pressure on them for payment. Others widely advertised the criminal nature of electricity theft and the serious penalties it incurs.
- Low-income communities present challenging opportunities for loss reduction. In order to be successful in these areas, strategies that have resulted in progress on loss-reduction and that have sustained themselves after losses were reduced significantly, include improvements in safety, access, affordability, and community engagement. **Regularization programs were often implemented along with energy efficiency campaigns** (normally lighting and refrigerator replacements) in order to address affordability issues and help customers curtail consumption.
- **Losses in the industrial and large commercial customer segment represent large losses of revenue for the utility company** and should be monitored rigorously and closely. The total amount of losses in this segment should be zero. A combination of technological and management practices, including regular energy audits, advanced metering infrastructure, stringent internal controls against collusion, and close customer monitoring can help the utility reclaim large revenue losses in this customer class.
- **Technology is an important component of loss reduction.** Advanced metering infrastructure, advanced meter readers, and location-based software (GIS) can help gather data and quickly expose irregularities in consumption.



- **Brand and corporate social responsibility are important considerations** – customers are more likely to respond positively to engagements, enforcement, and regularization when there is a sense of trust and mutual respect.

CONCLUSIONS FOR JAMAICA

For the final sessions of the Workshop, the participants broke into small, facilitated sessions run by international experts and directed at the JPS and OUR representatives to begin to compile a short list of recommendations and activities for Jamaica to consider while implementing future loss reduction programs. The takeaways from these sessions are below:

- Current state of Loss Reduction in Jamaica
 - JPS and OUR have made major strides recently in understanding the shape and characteristics of loss reduction. They have identified and segmented customers and have designed approaches tailored to each customer class (red zones, yellow zones, large industrial and commercial).
 - Past loss-reduction activities have been short-term and non-holistic (e.g. creating strike teams to tear down throw-ups, piloting new technologies, and regularizing or disconnecting customers). Some have been successful; others have been less so (e.g. RAMI in yellow zones vs. RAMI in red zones).
 - There is an identified need for a longer-term, more inclusive strategy for loss reduction which examines not only how to regularize consumers, but how to set customers up to understand the benefits of regularization and afford electricity consumption. Stakeholders are interested in collaborating to determine a strategy that is comprehensive, scientific, and takes a whole-of-government approach.
- Future program recommendations
 - OUR and JPS need to collaborate more effectively on creating a strategy and prioritizing actions which work towards sustained loss reduction over time. An action plan should be developed to collect the necessary data to measure the loss problem, prioritize the areas of greatest need for intervention based on cost-benefit analyses, and develop a vetted plan with quantitative targets for the short-term (3-6 years) and long term (10+ years) with a commitment from both OUR and JPS to its success.
 - While it is recognized that major strides can be made in 3-5 year periods, as illustrated by the international participants, the goal in Jamaica is sustained loss reduction, which involves significant time and investment in planning and implementation stages as well as in post-reduction maintenance efforts. As such, a successful program is likely to be one with a longer time horizon with well-defined shorter-term action plans. Stronger government engagement and additional funding sources are required to accelerate loss reduction through needed capital investment programs, particularly in the economically impoverished areas.



- Each loss-reduction action should consider the technological and management aspects of the activity as well as provide expected quantitative results (both in terms of net present value and in terms of improving the company's customer relations). Expectations should include assumptions for various levels of success and evaluate risk factors.
- Knowing your community and your customer are key to successful development and implementation of loss reduction efforts. Community and customer engagement is necessary. This means segmentation of consumers and utilizing solutions that are tailored and targeted to each community.
- Sharing solutions between Jamaica and countries with successful loss reduction programs should continue to be a priority. At the closing of the Workshop, stakeholders announced that a human resource exchange was agreed between Jamaica and Chile and that there will be discussions on further assistance from the World Bank and the Inter-American Development Bank (IADB) on future knowledge exchanges as well as from USAID on a readyboard pilot program.

INTERNATIONAL PRESENTATION DETAILED SUMMARIES

India - Tata Power Delhi Distribution Ltd (TPDDL) (utility), Presenter: Rajesh Bahl

- Reduced losses from 47% to 10% over 12 years, utility pays dividends, Delhi has some of the lowest tariffs in the country. Since 2008, actual losses were between 4% and 1% below their target.
 - The loss-reduction campaign was multi-staged. The most drastic reduction came a few years after significant investments started. Once these programs started to take hold, losses were reduced from 47% to 26% in 3 years. Investments continued to sustain low loss levels.
- CAPEX increased while losses decreased until losses were around 10% CAPEX peaked at 43% of operating costs for loss reduction. Reliability then prioritized.
- Key success factors – political will, technology upgrades first, energy audits, data analytics, strong enforcement, and community engagement.
 - Technological interventions -unmanned grids use SCADA through remote ops, GIS to track and mark consumers, Outage management system (OMS) helps generate plan for preventative maintenance to crews
 - Data Analytics – AMRs with SIM cards to centralized servers for seamless reading and analysis. Developed AMR software in house.
 - Theft detection – AMR/AMI sends data, logic runs on data – exceptional cases flagged, theft caseworkers dispatched.
 - Keeps monthly scorecard for employees overseeing different zones – bonuses and base salaries determined by scorecards annually
- Innovative business cases for low-income group in order to connect with the customers:



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- Tried to connect with the customer - Offered life insurance to customers who paid bills on time and regularly.
- Metering and billing - Initiatives included reducing cost of new connection
- Community service initiatives – improving socioeconomic conditions, building long-term relations with different age groups; built capacity to pay through employment initiatives
- The Indian government helped TTPDL finance most of its inner-city social intervention projects and it resulted in significant savings to the government (the programs contributed to savings of 20% of Delhi government)

Chile – Chilectra (Utility), Presenter: Marcelo Cardenas

- Chilectra's losses peaked at 22% in 1984, and dropped steadily from 21% in 1986 to 12% in 1992 to under 9% in 1996. These low levels of losses have been sustained and improved upon since; ATC&C losses are now at 5.3%, with about 1.4% commercial losses
- Three stages in their loss reduction plan: (1) confront clients and companies; (2) efficiency, profitability and technology; (3) sustainability
- Regulatory Framework's Assistance
 - Strong enforcement mechanism – theft is a punishable crime, 12 months in jail, able to back bill for 12 months and 3 months for technical failure of meter; utilized the media for making non-payment and specific customers theft public as well
 - “Fare recognition” economic incentives built into the regulatory framework for the utility company to address losses; Offer innovative rate incentives for payment of bill to encourage culture of payment
- Culturally the country has changed as well, decrease in squatters and increase in literacy
- Company looked to become proactive about losses and create a more sustainable operation: three pillars – productivity, communication and closeness (to clients and regulator)

Chile – SEC (regulator), Presenter: Braulio Valenzuela

- The regulator covers the entire country (31 energy providers) works in close condition with the Government of Chile and DISCOs to provide energy to 6 million customers.
- Regulator's position on losses: theft of electricity compromises quality and safety of electricity
 - Technical losses are the providers fault under the service rules. The energy which the consumers are charged reflect real consumption as closely as possible



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- Each zone has a figure which allows for a factor of technical losses, these are constructed between the government and the DISCOs
- Response: Regulatory body follows service rules for non-technical loss – when the provider detects an illegal connection it asks the SEC to suspend the supply.
- SEC analyzes patterns and can contact client to resolve separately or give authorization to cut supply
- SEC Procedures: Metering
 - Complaints- metering complaints can be routed through an app known as “Right Now”
 - Tariffs – SEC oversees the sector and supervises the tariffs allowed by the providers through analysis and comparison modeling
 - Rights and Service Rules: Ensures that rights are not under attack in reduction of losses
- Works together with distribution companies to create loss reduction plan; they meet periodically throughout the year to review the plan and progress
- Right now app – an application which takes complaints or delay reported from customers and providers, sends it to a complaint unit, aggregates and routes the complaint to a proper division within the response
 - Majority of complaints resolved are in residential areas – provider has been major benefactor of solutions

Colombia - Codensa (utility), Presenter: Andrés Velásquez

- In 1998, started with losses of 19.8%, reduced to 10% in 2002 –
 - Solutions – reducing energy losses, improvement of payment culture, customer loyalty – all in the development of sustainable relations with customers
- Stage 1: Reduction – 1998-2002, period of loss reduction strategy defined by investment, penalties, stable energy prices, and reduction of theft, invested \$300M in infrastructure
 - Funding of payments of customer connections, no unmeasured energy charges, issues credit cards to clients
 - Customer contact – outsourced collections, opened call center with 250,000 call capacity per month, opened new office, changed billing to monthly occurrence, launch quality meter measurement and replacement program
- Stage 2: Control – 2002 – 2009 - Gained ability to penalize and improved enforcement capabilities through technical solutions, invested \$70M in infrastructure.
 - Identification of non-technical energy losses – macrometering: consolidates various meters to see consumption from a group of meters, Innovative solutions for meter validation (micro cameras, reflectometer)



- Implemented technical solutions – protect low-voltage network from theft by putting medium voltage lines below, hide meter at the top of the pole with a display in the home
- Community engagements (prizes for Christmas light competition)
- Stage 3: 2009 – Present, Sustainability – staying ahead of fraud by rolling out piloted programs to larger customer bases (macrometering, analytics) and prioritizing interventions based on potential return
 - No longer able to imprison delinquent customers
 - Implemented business intelligence tools to help score customers by probability of theft, magnitude of theft, and prioritize interventions based on potential return
 - Continued community campaigns to promote culture of legal electricity consumption

Dominican Republic – Ede Este (utility), Presenter: Glendynthon Ortiz

- The DR has 615,000 billed customers, 36% electricity losses in EDE ESTE: Technical losses due to long circuits, no standard network architecture, low distribution voltage, overloaded High/Medium Voltage, non-technical losses due to corruption, illegal connections, commercial errors, nonpayment of 69% of losses take place in the slums - most of reduction activities take form of community outreach in slums and normalization
 - Rest of theft takes place in high/medium class zones, mostly through meter fraud. This is detected and eliminated through spot check
 - Remote metering (GPRS) used in both scenarios
- AMI used for revenue protection. Feeders used for remote and macrometers.
- Aiming to reduce losses by 2.5%,
- 10 projects in slums to reduce areas from 60% to 15%
- Investment is funded by multilaterals
- Payback of different projects – slum areas gives payback areas in 3-4 years, higher income areas are a bit quicker, but usually not sooner than 3 years – in time to pay back multilaterals
- Regulation enacted in 2007 made energy theft a felony. Hasn't had great impact though because it is very difficult to enforce.

Dominican Republic – CDEEE (utility), Presenter: Billy Guerrero

- Before 1999 the utility was vertically integrated government monopoly. Unbundling and reform of distribution sector. Sector has national energy commission (planning and policy, new energy sources) plus coordination agency (and economic transactions) and regulator. All GENCOS are privatized.



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- Regulator does not provide for cost recovery of loss reduction programs in tariff, Utility must focus subsidy, tariff has been frozen since 2007, DR spent \$1.3B to subsidize sector, 500M related to losses
- Customers do not receive 24/hr. electricity, do not trust utility, lack of prepayment
- Actions: concentrate on changing generation matrix – heavily dependent on HFO.
- Community outreach has focused on prevention and detection rather than recovery of arrears and punishment through macrometering
- No standard loss reduction unit, Role of the regulator is not strong, does not participate in reduction planning.
- Cost of one percent of losses is \$22M/y, investment needed to reduce one percent is \$50M
- Seeking multilateral financing (500M to get to target of 25% by 2019, 10% by 2025).
- Loss reduction programs are enabling greater reliability and revenue-based load shedding. Best customer classes get 24/7 electricity. However, load shedding is limited because CDEEE needs to serve 80% of demand.

Haiti – IDB (donor financing institution), Presenter: Lumas Kendrick

- The work on Haiti is driven by the donor community because of the fiscal situation in the country.
- Project focused in Port Au Prince (3 million people), 12% of customers regularized in Haiti, 70% have no grid access, 90% of energy from fossil fuels. \$150M a year in fiscal transfers to electricity sector. No regulator in electricity sector. AT&C losses of 60%. Majority of energy use is wood. 300MW installed capacity.
- Revolutionary culture interprets electricity as a right.
- Program with World Bank to install meters in IPPs and large commercial consumers to place shadow managers. Targeted seven circuits using net present analysis. Hurricane then earthquake made project impossible to implement for years.
- Redirected project to transformer replacement and data system improvement. Building environmental facility and rehabilitation.
- Installed remote meters.
- Lessons learned: project must start with requirements then shape budget.
 - Vested interests will resist strategies to reduce losses



Brazil – ANEEL (regulator), Presenter: Nadia Maki

- ANEEL is responsible for concessions for generation, transmission, distribution and criteria for tariffs to encouragement of loss reduction. Agency responsible for enacting power regulations
- Tariffs in Brazil – adjustment (yearly), revision (4-5 years, depending on concession contract), and extraordinary adjustment. Use differentiated tariff system through the country for each of the different electricity entities
 - Differentiated tariffs calculated using an econometric model to allow construction of complexity of loss index to create comparisons to show efficiency of losses through different DISCOs. The best-performing company sets the standard for each type of company.
 - Regulator's role in a differentiated tariff system is to create a broad scenario based on how companies are performing relative to one another rather than target a specific rate

Brazil – AES Eletropaulo (utility), Presenter: Wagner Pimenta

- Reduced losses by 30 percentage points since 2004. Most important activity was regularization in slums.
- 20M clients in Sao Paulo and 3.2M in Sul.
 - KPIs are energy added and % non-technical losses, also for illegal connections, energy fraud, added energy, and administrative losses.
- Losses reduced from 11.8% to 10% from 2009-2013. Technical losses account for 6.1%, Group B (mono/bi-phase) accounts for 91% of clientele, 45% of consumption and 80% of NTLs.
- Different strategies for different customer classes
 - Strategy for medium voltage – AMR and fraud inspection
 - Strategy for three-phase – Monthly consumption readings and fraud inspections and inspections of administrative losses
 - Mono/Bi-phase: all of the above plus regularization of illegal connections.
 - Strategy focuses on fraud inspection – 300 field crews (900 employees) engaged in fraud inspections
 - Strategy for administrative losses (clients with no registration, not regularized) to regularize clients and audit administrative activities
 - Cutoff installations with irregular consumption – cut off customers that have not consumed in one year. Tear down illegal installations.

Kenya – Kenya Power (utility), Presenters: Harun Mwangi, Margaret Cheptumo; and ERC (regulator), Presenter: Buge Wasioya

- Kenya has a population of 40 million, 3.3 million residential customers (33% on prepaid). 140k small and medium consumption (25% of sales), industrial 5.4k customers at various voltage levels (55% of sales, all on AMR). Losses were



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down to 16.2% in 2011, but up to 19.88% in 2014. Target was 15.4% and increased to 16.6% for 2014.

- Social challenges – low electricity access levels at inception; cartels within the low-income communities controlled the electricity supply and distribution system, creating social and security barriers for Kenya Power in addition to the traditional legal and technical challenges
- Technical challenges – large country, supply is far from load centers – long distances to transport power customers (long, low-voltage lines) rural electrification has expanded rapidly and has connected most.
 - Technical loss reduction initiatives – government has contracted HV lines to reduce technical losses by reducing reliance on low voltage and bring in new supply (international interconnectors and supply lines), standardized conductor size for MV and LV lines, incorporated small capacity transformers to reduce LV line lengths
- Non-technical challenges – low income and high concentration of population in Kibera
 - First slum electrification project – targeted 11k customers in Kibera slums, special authority granted to connect customers with load limiters and charge flat-rate consumption of 40 kW (but variable tariff changed value of 40 kW over time). Sweeps on connections, smart meter implementation and AMRs. Unsuccessful because load-limiters were resisted, tear-downs were bad for brand, cartels disconnected consumers from legal power to sell on the cartel-owned distribution network.
- Kenya Power applied for GPOBA (Grant Program for Outcome-Based Aid) outcome based aid grant of \$5M with \$10M IDA loan. Targeted 66k connections throughout the country provided at a subsidized rate.
 - Prepaid meters and low-cost readyboards w/o internal wiring to reduce costs, single-phase transformers to reduce installation cost, minimal LV network placed above MV line, max # of connections would be 17.
 - ESMAP organized exchange to Colombia, South Africa and Brazil, learned about the value of customer engagement.
 - National project has been implemented throughout the country, national and local government embraced the concept and engaged top KPLC members to launch programs for community engagement.
 - Created social compact agenda; Developed tailored services; Added softer slums to program; Improved affordability (\$13 through the bill, no interest over 12 months for connection fees); Waive need for documentation; Meters identify GPS coordinates, rather than by address
 - High-level buy-in from top government officials and contributions from other municipal services in tandem with electrification projects



ANNEX I: AGENDA

Purpose: Help the Jamaica Public Service Company Ltd (JPS Co, Ltd) and its regulator, the Office of Utilities Regulation (OUR), learn about and incorporate international best practices from companies that have successfully overcome similar challenges in loss reduction to those the Jamaica power sector faces.

Expected Outcome: Recommendations that JPS and OUR can take forward to improve cost-effectiveness of its loss-reduction efforts while meeting electricity access and operational goals.

Registration: Early registration and workshop briefings for international attendees and presenters: June 8 from 4 to 5 pm in Pegasus Lobby. All others attendees: June 9 from 8 to 9 am.

Day 1: Introductions and Overviews of Loss Reduction Efforts		
Topic	Time	Speakers
Opening Remarks	9:00 – 10:00 am	Denise Herbol, Mission Director (USAID/Jamaica); Albert Gordon, Director General (OUR); Kelly Tomblin, President/CEO (JPS); Honorable Phillip Paulwell, Minister (MSTEM)
Overview of the Workshop Schedule Introduction of Workshop Staff	10:00 – 10:15 am	Simone Lawaetz, SRUC Lead (USAID/E3)
Coffee Break (15 Min)		
Overview of Electricity Loss Reduction Efforts in Jamaica	10:30 – 11:30 am	Steve Dixon, Director, Transmission & Distribution Asset Management (JPS) and Hopeton Heron, Deputy Director General (OUR)
Loss Reduction Solutions in Delhi, India	11:30 – 12:30 pm	Rajesh Bahl, (TPDDL)
Lunch (1 hour)		
Loss Reduction Solutions in Chile	1:30 – 2:30 pm	Marcelo Cardenas (Chilectra) / Braulio Valenzuela (SEC)
Loss Reduction Solutions in Bogota, Colombia	2:30 – 3:30 pm	Andrés Velásquez (Codensa)
Coffee Break (15 Min)		



Day 1: Introductions and Overviews of Loss Reduction Efforts

Loss Reduction Solutions in Dominican Republic	3:45 – 4:45 pm	Gledynthon Ortiz (Ede Este) / Billy Guerrero (CDEEE)
Loss Reduction Solutions in Haiti	4:45 – 5:15 pm	Lumas Kendrick (IADB)
Loss Reduction Solutions in Sao Paulo, Brazil	5:15 – 6:15 pm	Jose Cavaretti (AES (retired)), Wagner Pimenta (AES Eletropaulo) / Nadia Maki, (ANEEL)
OPTIONAL: HAPPY HOUR & DINNER	6:30 – 8:30 pm	Location: Red Bones, the Blues Café 1 Argyle Road, Kingston 10, Jamaica W.I.

Day 2: Regulatory Policies, Technological Approaches and Community and Customer Engagement in Low-income Communities

Topic	Time	Speakers
Introduction to Morning	9:00 – 9:15 am	Moderator: Simone Lawaetz (USAID/E3)
Panel 1: Regulatory Policies for Loss Reduction	9:15 – 10:15 am	Lead: Victor Parlicov (NARUC-Moldova) Panelists: Braulio Valenzuela (SEC); Nadia Maki (ANEEL); Ansord Hewitt (OUR)
Panel 2: Preparing for Community Engagement for Loss Reduction: Techniques for Gaining Initial Community Acceptance	10:15 – 11:15 am	Lead: Rajesh Bahl (TTPDL) Panelists: Andres Velasquez (Codensa); Billy Guerrero (CDEEE); Rajesh Bahl, (TTPDL); Marilyn Mcdonald (JPS)
Coffee Break (15 Min)		
Panel 3: Techniques that work with industrial and commercial customers	11:30 – 12:15 pm	Lead: Gledynthon Ortiz (EDE Este) Panelists: Rajesh Bahl, (TTPDL), Marcelo Cardenas (Chilectra); Winston Robotham (OUR)
Panel 4: Measurement and Prioritization of Losses: Tools and Standard Approaches	12:15 – 1:00 pm	Lead: Todd Johnson (World Bank) Panelists: Marcelo Cardenas (Chilectra); Billy Guerrero (CDEEE); Hopeton Heron, (OUR)
Lunch (1 hour)		

Day 2: Regulatory Policies, Technological Approaches and Community and Customer Engagement in Low-income Communities

Panel 5: Affordability Assistance for New Customers and Tailored Services and Community Development Initiatives	2:00 – 3:00 pm	Lead: Jose Cavaretti (AES retired) Panelists: Wagner Pimenta (AES); Andres Velesquez (Codensa); Rajesh Bahl (TTPDL); Keith Garvey (JPS)
Overview Presentation - Technological Solutions for Loss Reduction	3:00 – 3:30 pm	Nigel Wills (Deloitte)
Coffee Break (15 Min)		
Loss Reduction Solutions in Kenya	3:45 – 4:45 pm	Harun Mwangi (Kenya Power); Buge Wasioya (ERC)
Presentation Topics for Day 3 Working Sessions	4:45 – 5:00 pm	SRUC Day 3 Moderators and JPS/OUR Leads

Day 3: Working Sessions (Break-out Format in 3 Parallel Tracks)

Topic	Time	Speakers
Introduction to Day and Session Breakout/Organization	9:00 am – 9:15 am	Moderator: Simone Lawaetz, (USAID/E3)
Panel 6: Techniques that work in Challenging Slums	9:15 – 10:15 am	Lead: Margaret Cheptumo (Kenya Power) Panelists: Gledynthon Ortiz (EDE Este); Andres Velasquez (Codensa); Marilyn Mcdonald (JPS)
1) Community and Customer Engagement Track	10:15 – 12:30 am	Moderator: Connie Smyser (Deloitte) Notetaker: Sophia Peters (Deloitte)
• Deep Dive 1A: Tools for Community Engagement		
Coffee Break (15 Min)		
• Deep Dive 1B: Customer Engagement and Affordability, Accessibility, Energy Efficiency and Safety Assistance		
2) Technological Track	10:15 – 12:30 am	Moderator: Nigel Wills (Deloitte) Notetaker: Ethan Doyle (Deloitte)

Day 3: Working Sessions (Break-out Format in 3 Parallel Tracks)		
• Deep Dive 2A: Strengthening Technological Approaches for Loss Reduction		
Coffee Break (15 Min)		
• Deep Dive 2B: Smart Meters and Loss Reduction		
3) Regulatory and Legal Track	10:15 – 12:30 am	Moderator: Victor Parlicov (NARUC - Moldova) Notetaker: Ryan Daly (Deloitte)
• Deep Dive 3A: Loss Measurement & Building a Financial Case for Management and Regulators		
Coffee Break (15 Min)		
• Deep Dive 3B: Regulatory and Legal Issues		
Lunch 12:30 – 1:30 PM		
Future of Loss Reduction	1:30 – 2:00 pm	Jose Cavaretti, (AES - retired) & Wagner Pimenta, (AES)
JPS/OUR Summary: “Take-aways” for Jamaica	2:00 – 2:45 pm	JPS/OUR Leads from each Deep Dive Track
High-level Summary & Closing	2:45 – 3:00 pm	Simone Lawaetz (USAID/E3) JPS & OUR
CLOSING COCKTAIL HOUR <i>Band, Drinks, and Food on the Pegasus Roof</i>	5:00 – 7:00 pm	Talk of the Town – Roof (<i>accessed by 17th Floor; Band, Drinks, and Food on the Pegasus Roof</i>)

ANNEX II: WORKSHOP ATTENDEES

Name	Association	Role	Email
Wagner Pimenta	AES Electropaulo	Presenter	wagner.pimenta@aes.com
José Cavaretti	AES Electropaulo (retired)	Presenter	josecavaretti@gmail.com
Nadia Maki	ANEEL	Presenter	nadiamaki@aneel.gov.br
Yasmin Chong	Chairman, Consumer Advisory Committee on Utilities (CACU)	Attendee	ymchong@msn.com
Marcelo Cardenas	Chilectra	Presenter	marcelo.cardenas@enel.co m
Andres Velasquez Velez	Codensa	Presenter	andres.velasquez@enel.co m
Vivienne Williams	Consultant	Attendee	vivienne.williams62@gmail.com
Billy Antonio Guerrero Lorenzo	Corporación Dominicana de Empresas Eléctricas Estatales (CDEEE)	Presenter	bguerrero@cdeee.gob.do
Connie Smyser	Deloitte	Staff	Conniesmyser@aol.com
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