



Addressing the Challenge of Losses in Jamaica



How2Guide Smart Grids in Distribution Network:

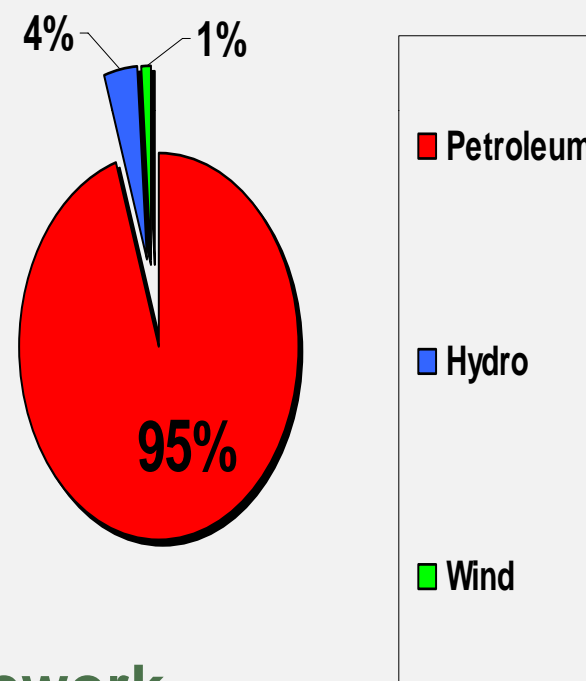
Electricity Federal Commission's Technological Museum (MUTEC)

Mexico City, March 26-28, 2012

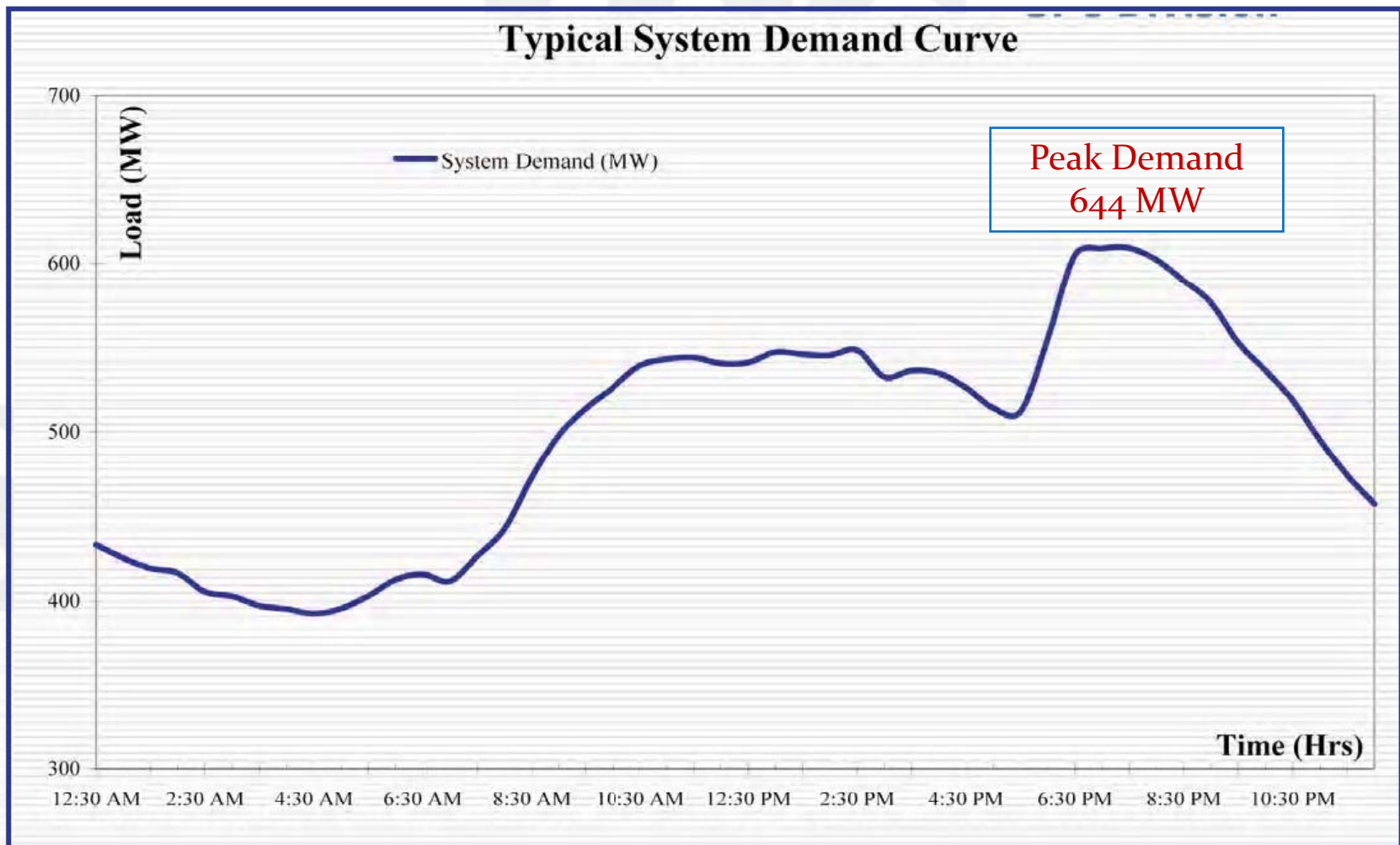
Presenter: Douet Stennett
Director - Regulatory Affairs
Ministry of Science, Technology, Energy and Mining
Email: dstennett@mem.gov.jm
Website: www.mem.gov.jm

PROFILE: JAMAICA'S ENERGY SECTOR

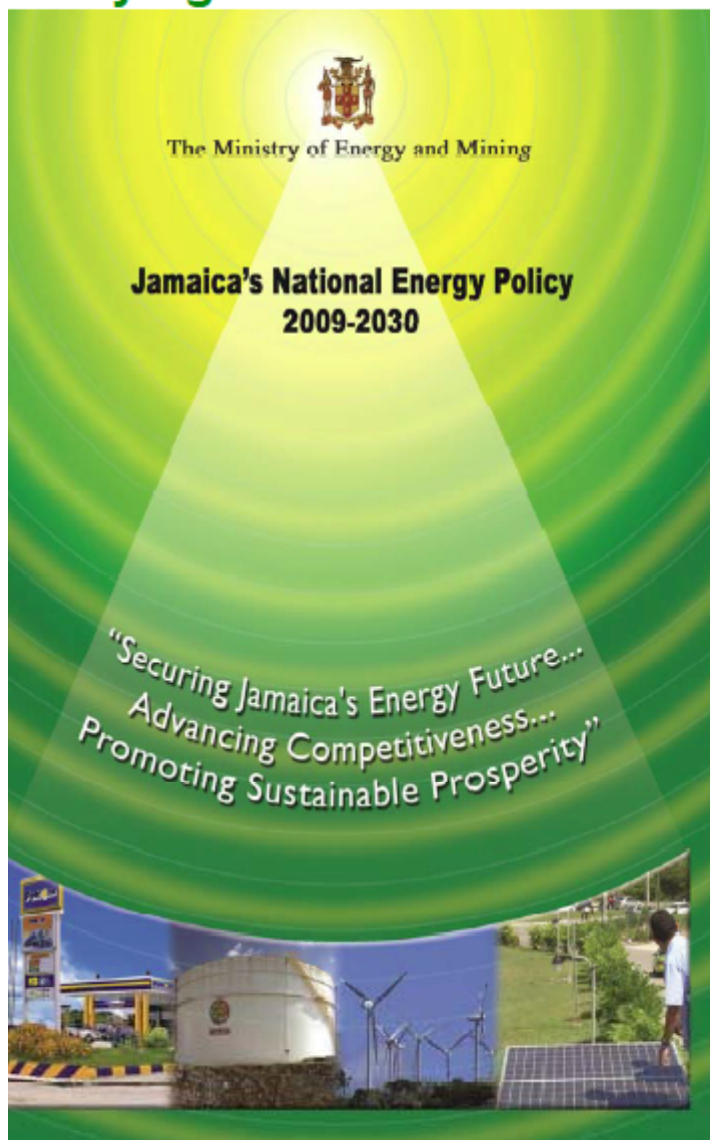
- High dependence on imported oil - 90%
- High Energy Consumption & Intensity:
 - Bauxite/alumina – 30%
 - Power/electricity generation – 23%
 - Transport – 42%
 - Per capita consumption - 8.0 boe
 - Excluding the bauxite sector - 5.0boe
- Low efficiency
 - Electricity generation – 29%,
 - Bauxite/Alumina: 75% – 85%
- System Peak Demand – 644 MW
- High Cost of Electricity – 40 US cents/kWh
- High Electricity System Losses: 23%
- Only 5% from Renewable - Hydro and Wind
- Need for an appropriate regulatory framework



TYPICAL SYSTEM LOAD DEMAND PROFILE



Laying the Foundations



Website: www.mem.gov.jm

7 Priority Areas & Related Goals

1. Improved Energy Conservation and Efficiency
2. Modernized Energy Infrastructure
3. Development of Renewable Energy Sources
4. Energy Supply Security & Diversification of fuel Sources
5. Well-defined and established governance and regulatory framework
6. Government Ministries, Agencies & Dept as Model leader
7. Eco-efficiency and Green Economy

In order to address the current energy crisis and guide the future developments in the energy sector the GOJ through the National Energy Policy has Promulgated several long term strategies.

Priority “Next Steps”



- **Smart Grid Roadmap**
- **Smart Grid Network Communications Strategy**
- **Projects Implementation**
 - Energy Security and Efficiency Enhancement Project
 - Public Sector Energy Efficiency Technical Assistance and Investment Project
 - Low Carbon Road Map and Carbon Mobilization
 - Hotel Energy Efficiency (CHENACT – 2)
 - Capacity Building Programmes
- **Ongoing Review of Policy and Regulatory Framework (Governance)**
- **Comprehensive Communication and Public Education Programme**

Overview of Losses

- **System Losses - 23%**
 - **Technical - 11%**
 - **Non-Technical Losses - 13%**
- **Breakdown of Non-Technical approx**
 - **Primary Metered Customers (Large C&I) - 1%**
 - **Small (C&I) Customers - 2%**
 - **Residential Customer - 3%**
 - **Non Customers - 7%**
 - Total Non - Technical 13%**
- **In 2010 the Electric Utility lost approx. US\$50 Million because of theft.**
 - **Approx. US\$ 4.5 for every 1% of non-technical losses**

Addressing Losses caused by low income residential users

- Kingston accounts for 31% of total non-technical energy loss
- 3 communities in Kingston account for 7.1% of it's total losses

Community	Approx. Number of customers	Number of Paying Customers	Approx. Number of illegal users	Monthly Non Technical Loss
Community A	200	0	2,800	720 MWH
Community B	700	32	2,300	412 MWH
Community C	27	2	2000	128 MWH

Challenges in Addressing Losses

- No culture of payment for actual usage of energy by any kind of users
- No legal document to prove the ownership of the residence for many users
- No standard house wiring for the customers and users that can be certified
- High amount of arrears by some of the customers because of prolonged periods of non payment
- Many Senior Citizens unable to go to the Utilities office to get themselves regularized

Attacking Losses caused by Low Income Residential Users

Electric Utility Investment (US\$ 1.96M)

Community A: US\$ 883K

Community B: US\$ 650K

Community C: US\$ 430K

Payback:

- optimistic scenario: 0.8 years
- realistic scenario: 1.7 years
- pessimistic scenario: 2.5 years

Attacking Losses caused by low income residential users cont.

- Network re-engineering (Anti-Theft Networks)
 - Basic meter relocation: Meter Centers

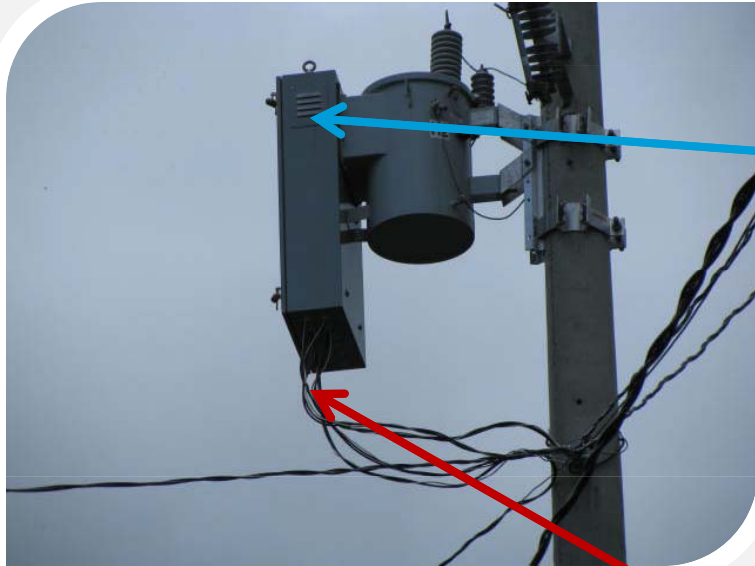




Residential Automated Metered Infrastructure (RAMI)

- **RAMI System**
 - **Customers' meters are clustered on Utility poles in tamper resistant cabinet**
 - **All customers are connected downstream from meter cabinet to individual meters**
 - **Existing meters are removed from the customer premises**
 - Meter sockets at premises covered
 - **Customers are issued with easy to read display units**
 - Provide customer with consumption data
 - Means of communicating with customer via SMS

Residential Automated Metering Infrastructure



Tamper Resistant Cabinet
with multiple RAMI meters

Service drop from remote meters
to customers premises

Addressing Losses caused by low income residential users



Customer Display Unit (CDU)



- Can be placed anywhere in the building
- Displays consumption:
 - actual
 - accumulated since last reading
- Receives notice of due date for payment
- Disconnection warning
- Multiple messages from the Utility



RAMI System Implementation at a low income residential area

- **Construction**
 - Network Reconfiguration
 - Change
 - Line Extension
 - Fully Integrated RAMI system installation date: October 1, 2010

The Commissioning

- Cut Over - July 26, 2010

Existing and new customers were connected to the newly constructed RAMI system with effect from July 26, 2010

Existing old low voltage lines and transformers were removed subsequently

Once the old lines are removed the illegal users will not have supply of energy any more.

No customer that signs up and pays the deposit for house wiring at the temporary office will be left without energy.

House Wiring: works and financing

- The Utility provides the customer a solution to get the General Electric Inspector Certificate
 - at customer's choice: the Rural Electrification Program is contracted by the Utility to wire the customer's house according to approved standards with materials provided by the Utility
- The Utility provides financial assistance to customer to facilitate house wiring
 - Customer required to fill out contract and indicate number of fixtures
 - The average cost of house wiring ranges from US\$400 to US\$900
 - Initially customer needs to pay up front 10% of total cost
 - The balance 90% is financed by the Utility
 - Balance is paid over 4 years period at no interest
 - Monthly payment forms part of light bill



Education Temporary Commercial Office

- Temporary office established within community
 - Not unique to low income residential areas
 - Office opened on July 5, 2010 and kept for a week
 - Office facilitated
 - Establishing of new contract
 - Sign up for house wiring loan
 - Various types of queries
 - Negotiating payment arrangement for outstanding balance
- Special desks with Customer Services Representatives within existing nearby offices



Education “Soft Landing Approach”

Approach geared at allowing customers to determine what they are comfortable paying

- **Discounts will be applied to light bill for 7 months**
 - First Month- 100% discount
 - Second and Third Month - 75% discount
 - Fourth and Fifth Month - 50% discount
 - Sixth and Seventh Month - 25% discount
 - Month one starts at the next billing period after completion of project

Education Communications Campaign

- Town crier:
 - Calling for town hall meetings
 - Reminding of office opening
- Flyers distributed during the opening of the temporary office
- Special TV, print and radio advertisements, inviting residents to sign up for legal, safe supply.

