Introducing Mandatory Revenue Protection Initiatives to Improve Municipal Cash Flow

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DEFINING THE ELECTRICITY LOSS PROBLEM

FACTORS IMPACTING NON-TECHNICAL LOSSES

IMPACT OF NON-TECHNICAL LOSSES

SETTING UP A REVENUE PROTECTION TEAM

NERSA LICENCE AGREEMENT SHORTFALL
THEFT IMPACT

- Deprives the Utility of income
- Presents a Health and Safety risk
- Increases the tariffs for those customers who diligently pay
## NATIONAL TREASURY 2012/13 LOSS STATISTICS FROM AUDITED FINANCIAL STATEMENTS

<table>
<thead>
<tr>
<th>Province</th>
<th>Rand (Thousand)</th>
<th>kWh's</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gauteng</td>
<td>2 036 031.34</td>
<td>3 185 611 242</td>
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<tr>
<td>Kwa Zulu Natal</td>
<td>1 851 461.54</td>
<td>946 546 823</td>
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<tr>
<td>North West</td>
<td>1 073 172.44</td>
<td>37 222 689</td>
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<tr>
<td>Western Cape</td>
<td>591 219.54</td>
<td>256 817 974</td>
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<tr>
<td>Eastern Cape</td>
<td>484 359.04</td>
<td>699 155 623</td>
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<tr>
<td>Freestate</td>
<td>336 560.57</td>
<td>33 694 065</td>
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<tr>
<td>Northern Cape</td>
<td>184 029.90</td>
<td>130 354 734</td>
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<td>Limpopo</td>
<td>51 310.76</td>
<td>20 237</td>
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<tr>
<td>Mpumalanga</td>
<td>30 375.00</td>
<td>29 809</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>6 638 520.12</strong></td>
<td><strong>5 289 453 200</strong></td>
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</table>
Reality is electricity theft is happening everywhere – not only in your Utility
Including in business, industry and commerce
Meter tampering and bypassing is much more discreet in large installations
Sophisticated and difficult to detect the potential to cost the Utility much more.
LOSING CONTROL

• Strict governance indicators and effective accountability are not applied
• Various initiatives can and have been applied ranging from technical solutions such as tamper resistant meters
• Various managerial methods as well as inspections and monitoring.
• Smaller Munics do not have dedicated RP staff
• No Operational Budget
• Dedicated Revenue Protection Sections can recover +R18 billion for the Prescription Period
• +39% increase in electricity costs since 2012/13
• Estimated + R9.2 billion in total electricity losses for 2017/18
Experience has shown that Utilities who initiate dedicated Revenue Protection Sections soon find that these units become self-funding and within a period of as little as 2 years can clawback significant lost revenue for the Utility. Furthermore, one should not forget that audited and reinstated installation are once again the cash register of the utility.
FACTORS THAT IMPACT NON TECHNICAL LOSSES

ILLEGAL CONSUMPTION
- Illegal Connections by Unknown Consumers

FRAUDULANT ACTS
- Meter Tampering
- Unsafe Leads
- Data fraud
- Corruption

ERRORS
- Inaccurate recording of consumption
- Inaccurate data
- Metering faults

INFLUENCE FACTORS
- Lack of punitive action - Bylaws
- Syndicate activities
- Indigent tariff
- No revenue protection section / budget
- Lack of specialization
IMPORTANT BEST PRACTICES

- Auditing of meters
- Remedial Actions
- Data Analysis
- Revenue Recovery Processes
- MD Meter Recertification
- Revenue Loss Forum
It is important to note that the tampering ratio between domestic and commercial industrial customers is in the order of $90/10$ with approximately $90\%$ of all tamper cases been found in the domestic environment.
Strategic Objectives

- Arrest Upward Losses Trend
- Reduce Losses
- Ensure Sustainability

Focus Areas

1. Meter Audit Processes
2. Remedial & Recovery Actions
3. Implement Best Fit Technology Solutions
4. Deploy and Maintain

Communicate / Educate / Behaviour Change
Important issues are as follows:-

1. Size of the unit (1 staff per 5 000 consumers)
2. Specialized members (RR, Data, Investigations)
3. Integration with other Departments (RLF)
4. Rapid response teams (resourced and trained)
5. Excellent liaison with Law Enforcement
6. Knowledge Levels of individuals (think out of box)
Nightmare

- Large volume of leads likely to be generated – need to manage data volumes to avoid swamping communication and investigation resource

- Inclusion of interference alarms (tamper flags) within the smart meter design

- Inability of interference alarms to identify by pass

- High level risks of hacking and low level risks of deliberate trigging of alarms

- Management of data driven leads
• Actions should be **Data Driven Operations**.
• **Close monitoring** and proactive actions
• KPI’s for objective performance measurement is important and should be focused on the **recovering of losses** rather than just detecting theft cases.
• **Top Level Management** support and is very important
The question is “should we outsource certain aspects of our revenue business or not?"

We think the time has come to take back the controls of our revenue generation processes and rather teach and enable our own employees to perform such tasks.
IMPACT OF HIGH LOSSES

- NERSA supply licence could be at risk
- NERSA approval of new tariffs could be delayed
- Cash flow income will be reduced
- More compensation Law Suits
- Escalation of Community violence
- Lack of faith in political structures re Service Delivery
- Loss in income will cause the network to degrade
- Escalation of operational costs
6% of operational income to be used to reduce technical losses – nothing for non-technical losses

Municipalities must provide budget for RP activity to reduce non-technical losses

Not a licence requirement and CFO’s must provide budget with reduced income and cash flow

SARPA recommends that a minimum of 1-2% of operational electricity income be used to fund RP operations until the National standard of 9% electricity losses is achieved
• Civic involvement through proactive discouraging initiatives
• Councillor involvement in fighting the scourge
• Public campaigns to expose tampering customers
• Public campaigns to discourage theft and warnings
• Rewards system (e.g. reward for information)
• Improvements in the modus operandi of RP
PROCESSES IN PLACE

Analyse Loss Profile
- Non-technical Losses Analysis
- Billing Analysis
- Payment Behaviour & Collections Analysis
- System Reliability Analysis

Plan & Execute Audits
- Plan and Prioritise Audits
- Source and Manage Resources
- Capture Information
- Report Findings

Resolve Audit Findings
- Resolve Tampering
- Resolve Metering Problems
- Resolve Data & Process Issues
- Revenue Recovery

Evaluate Performance
- Losses Performance Reporting
- Evaluate ROI Management Interventions
- Implement Improvement Initiatives
WHAT CAN BE DONE

• Participation in Regional and National meetings of The Southern African Revenue Protection Association
• Electricity theft can never be totally eradicated
• Effort devoted to technological and managerial methods
• Inspection and monitoring - visible policing
• Become knowledgeable about the theft problem
• Message “no pay no electricity” instilling a payment culture
• Role-out of new technology where economically viable.
New Technology

- Pole top theft detection unit: Can interface with pole mounted DIN rail meters OR consumer premise installed meters for advanced smart
- Has in-built RF communication for round the clock monitoring without paying recurring GPRS costs
- Ready to be integrated with all meter types from major meter manufacturers in Nigeria and globally.

Theft detection PTU works with both types of meters!!!
Disconnection/reconnection happens outside meter through circuit breaker
LOW TECH SOLUTIONS
CHALLENGES

- No tamperproof meter nor kiosk
- Cultural and behavioural changes difficult
- Meter accommodation challenges
- Enemy within threat
- The 80/20 principle to be noted
- Switch-off solution where tampering is ingrained
- Political buy-in with awareness campaigns
- Staff training - keep abreast of technology and tamper curve
- Cut Current Transformers in three phase meters to cut off energy measurement
- Replacement of Ferrite Beads with resistors in three phase meters
- Four resistors installed in series on the circuit board to limit current flow and insulated not to cause short circuits
Tampering of Single Phase Prepaid Meters

- Resistor inserted in green coded signal cable through comm port without opening meter
- Foreign circuit controlling energy registers using a remote device to limit energy measurement in single phase meters
- Current signal cable cut through comm port using a spoke. Meter pulsing not decrementing credit in 1 phase prepaid meters
• In conclusion it must be mentioned how the entire Revenue Protection concept has developed in the past 20 years and has now reached a new level of expertise, which has resulted in the need for those involved in such actions to go to the next level of specialization.

• This has come about due to the fast tracking of the technology development process of metering worldwide. This has triggered Service providers to capture the market and offer all kind of packages and wonderful solutions.
Thank You!