Basia Consulting

ESCo Development Case Study

ENERGY · ENVIRONMENT

Presented by:
Nozipho Nkosi

Purpose

- To share information and ideas on our experiences.
- Share our lessons drawn from our previous experiences on the projects we have worked on.ie Umsobomvu Local Municipality, Masilonyana Local Municipality, Ephraim Mogale, Modimolle Municipality etc

- What is an ESCo?
- What do ESCos do?
- How can the ESCo market be developed?

ESCOs

- An ESCO is a company that provides energy services such as energy audits, energy management, supply and installation of material.
- ESCOs provide designs, installations and maintenance of the technologies.

Interventions to develop ESCOs

- Keys to ESCO market development;
  - Accreditation
  - Awareness campaigns
  - Skills development
  - Financing solutions

Our Focus

- Our main focus areas of operation;
  - Energy management - EEDSM
  - Environmental services

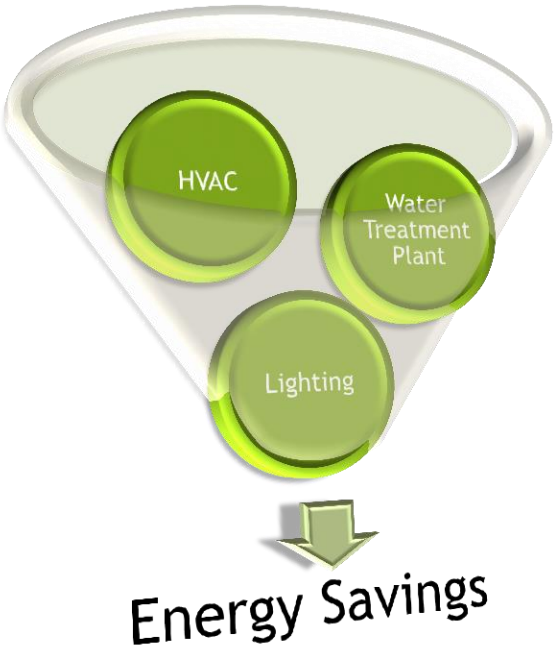
EEDSM Process

STEP 1
- Energy Audit
- Baseline Report

STEP 2
- Business Plan
- Implementation

STEP 3
- Reporting
- Measurement and Verification
- Project Close Out

EEDSM Scope



- Lighting-
  1. Street-lighting
  2. Building lighting
  3. High-mast lighting

- Water/Waste Treatment Plants
  1. Premium Motors
  2. Variable Speed Drives
  3. Telemetry

- HVAC
  1. Air conditioners

- Geysers
  1. Solar Geysers

Summary of Projects

Municipality	Project Scope	Implementation Process
Modimolle	• Street lighting • Building lights	1. SLA with client 2. Conduct energy audits 3. Establish baselines 4. Develop Business Plan 4.1 Determine energy efficient technologies 4.2 Develop appropriate technical specification 4.3 Cost 5. Implementation & reporting 6. Measurement & Verification (Independent)
Ephraim Mogale	• Streetlights • Building lights • Smart metering	
Mafube	• Street lighting • Building lights • HVAC systems • Motors • VSDs • Smart metering	

Cont'd

Municipality	Scope	Implementation Process
Masilonyana	• Street lights • High mast lights (On-going)	1. SLA with client 2. Conduct energy audits 3. Establish baselines 4. Develop Business Plan 4.1 Determine energy efficient technologies 4.2 Develop appropriate technical specification 4.3 Cost 5. Implementation & reporting 6. Measurement & Verification (Independent)
Umsobomvu	• Street lighting • High mast lights • Building lights • Bulk metering	
	• Smart metering	

Example 1: Street lighting Masilonyana Municipality

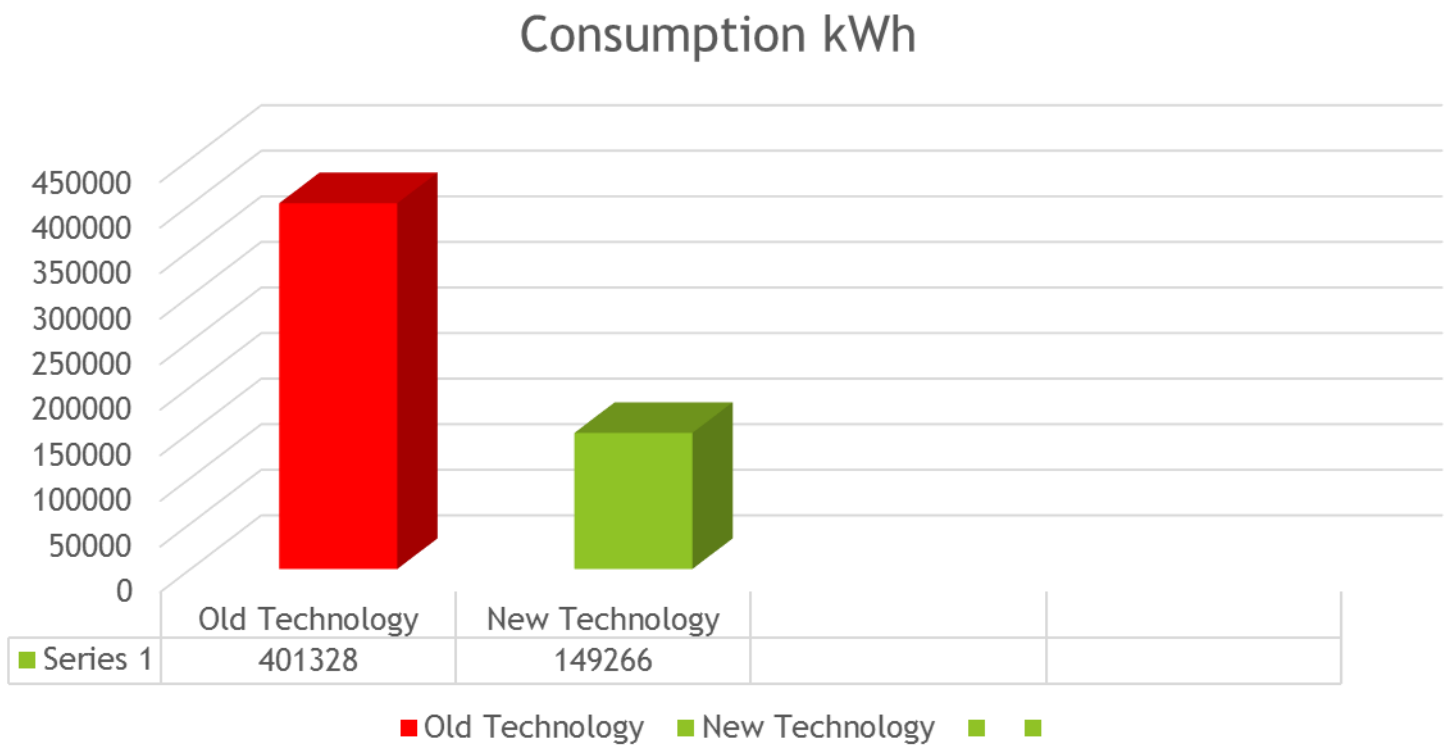
- Status quo and savings

Project	Quantity	Existing	Interventions	Projected Savings	Status
Streetlights	643	125W HPS	53W LED	232 348,05	Done
High mast lights	294	400W MH	240W LED	206 571,75	On-going

All calculations based on 11 hours per day.

- Challenges
  - Un-uniform pole heights and separating distances which compromises the designs and quality of lighting output eg Dark spots.
  - Ageing infrastructure and lack of maintenance.

- Energy savings (kWh/y) for Masilonyana Municipality street lighting



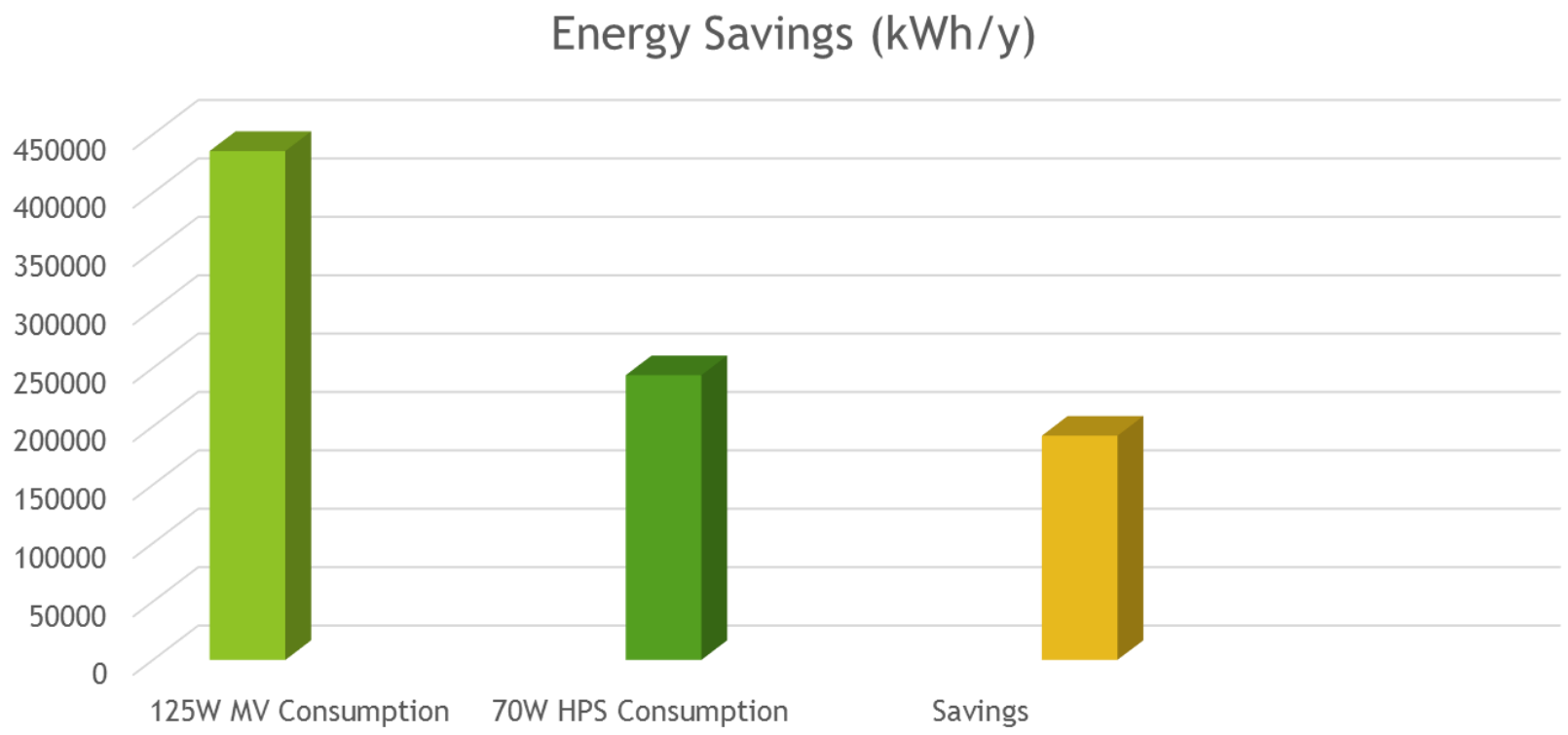
Mafube Street Lighting

- Inventory, interventions and savings

Project	Quantity	Existing	Interventions	Proposed savings	Status
Streetlights	759	125W MV	70W HPS	191 985,26	Completed

- Calculations based on 11 hours per day and light fitting switch gear wattage estimated to be 14%
- Challenges
  - Un-uniform pole heights and separating distances which compromises the designs and quality of lighting output eg Dark spots.
  - Ageing infrastructure and lack of maintenance.

Consumption and savings for Mafube street lighting



Umsobomvu Street lighting

- Inventory, intervention and savings

Project	Quantity	Existing	Interventions	Projected savings	Status
Streetlights	57	250W MV	144W LED	32 268,56	Done
	894	125W HPS	53W LED	323 046,90	Done

- All calculations based on 11 hours per day.
- Challenges
  - Un-uniform pole heights and separating distances which compromises the designs and quality of lighting output eg Dark spots.
  - Ageing infrastructure and lack of maintenance.

Example 2: Building Lights
Mafube Municipality

- Inventory, Interventions and Savings achieved

Existing technology	Interventions	Quantity (Total)	Savings (kWh/y)
• 14W CFL • 4ft, 36W fluorescent • 5ft, 58W fluorescent	• 5W LED bulbs, • 4ft,18W LED tubes • 5ft, 22W LED tubes	1150	89 000

Challenges

- Lack of maintenance and old light fittings

Umsobomvu Municipality

- Inventory, Interventions and savings

Project	Qty	Existing	Intervention	Status
Building lights	242	60W incandescent	5W LED	Completed
	125	36W Fluorescent	18W LED tube	Completed
	422	58W Fluorescent	22W LED tube	Completed

Example 3: Mafube Motors and VSDs

- Status quo, interventions and savings achieved on the installation of energy efficient motors and variable speed drives.

Existing technology	Interventions	Quantity	Savings achieved (kWh/y)
IE1 motors	IE3 motors with VSDs	56	604 137

- Challenges
  - Faulty pumps impact directly on the life span of the new IE3 motors given the two components are mechanically coupled.
  - Lack of maintenance
  - Technical skills shortage to accommodate new and improved technology employed
  - Delayed payments – Municipality under administration
  - Disposal of old pumps
  - Municipality demanding spare parts

Site Pictorials

Villiers Before and After

Frankfort Before and After

VSDs Installed at Treatment Plant

Cont'd

Villiers Community hall

Villiers Chamber

Villiers Main Street

Cont’d






Lessons learnt

- Installation of smart meters before energy efficient interventions.
- Communication with DoE and the municipalities
- Reporting channel

Recommendations

- Skills development programme for municipal personnel to be capacitated on the new and improved technologies recommended by DoE.
- A separate grant for maintenance of electrical infrastructure
- A nationalized programme for accommodate the subscription for smart metering – data for all municipality can be accessed as and when required.

Thank You

Questions