



**By 2030 eThekweni will be Africa's
most caring and liveable city**



Energy Efficiency best practice: eThekweni Municipality

Adelard Karuhariwe

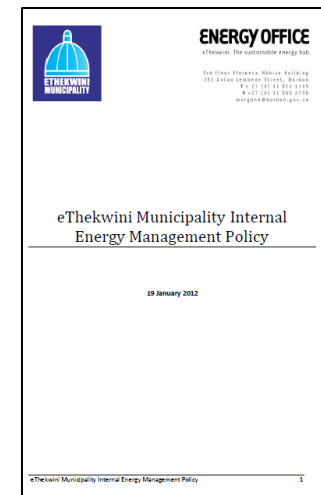
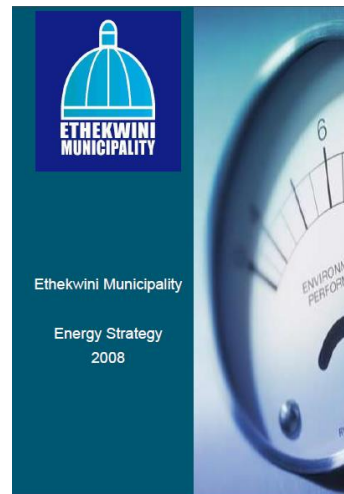
Energy Efficiency in Sub-Saharan African cities
Towards the Covenant of Mayor in Sub-Saharan Africa
Workshop in Nairobi, Kenya. 26th – 27th October 2015.

About the Energy Office

- Mission: to transform Durban's governance, social, development & economic systems in order to effectively mitigate climate change.
- Four main branches:
 - Project Management;
 - Renewable Energy;
 - Energy Efficiency; &
 - Climate Change.

Strategies & Policies

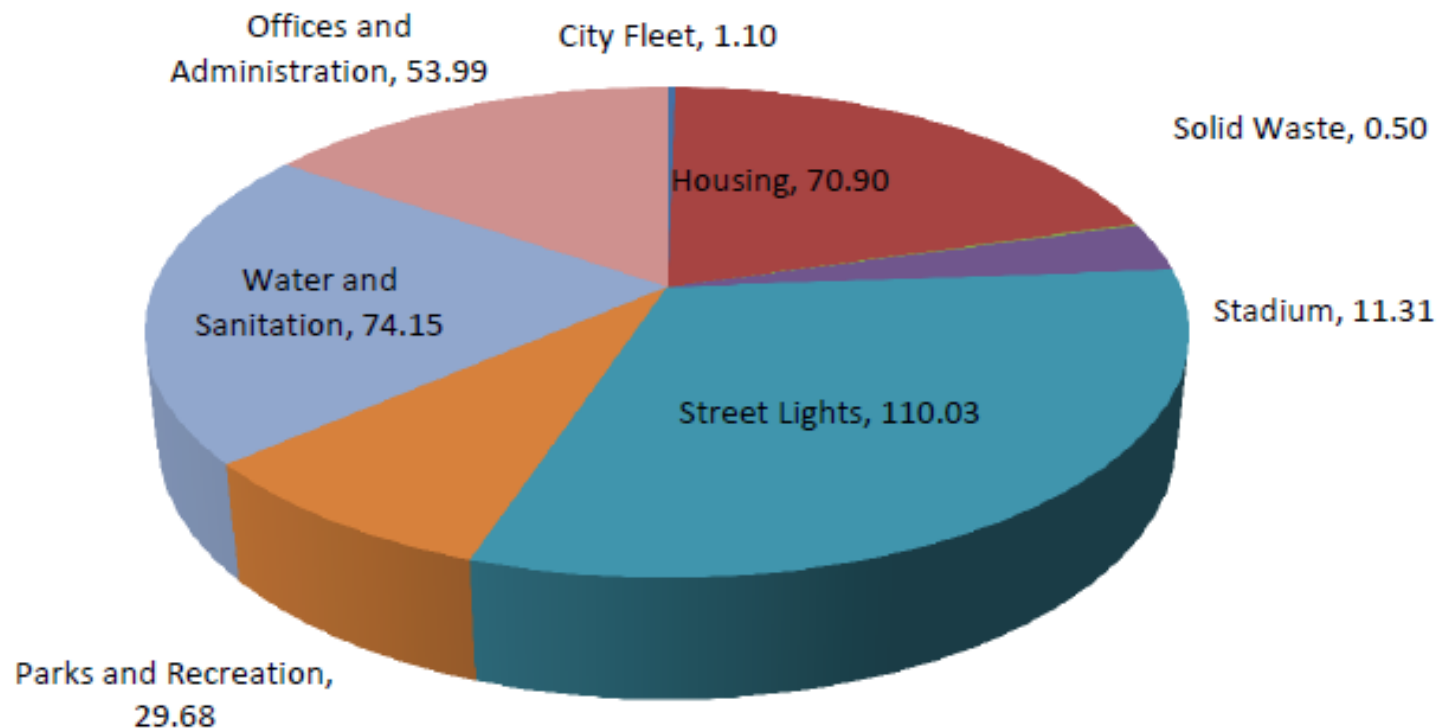
- Durban Climate Change Strategy (2015).
- Energy Strategy (2008).
- Internal Energy Management Policy (2012).



eThekweni Energy Context

- 11,447 GWh (2013).
- 45 GWh (2013) – embedded RE.
- 1,450,983,347 litres : Diesel (2013).
- 1,095,678,881 litres : Petrol (2013).

eThekweni Electricity Context



Electricity consumption: Municipal owned facilities: GWh. (excluding losses)

Energy Efficiency Branch

- EE Manager and EE Project Officer.
- Responsibilities:
 - Identification;
 - Designing & planning;
 - Funding applications;
 - Collaboration;
 - Implementation; &
 - Procurement.

Funding sources

- Internal eThekweni Municipal Budget.
- Division of Revenue Act/Bill – Energy Efficiency Demand Side Management (R45m).
- Eskom.

Municipal Facilities

- Over 2,000 facilities.
 - Office buildings, clinics, swimming pools & depots.
 - One branch (EBS) responsible for all electrical maintenance.
 - EE interventions is dependent on collaboration with Electrical Building Services (EBS).

Municipal Facilities

- Energy Office's role.
- Vacancies.
- Project Management support (contracted).

Municipal Facilities EEDSM

- An initiative of government aimed at providing 'grants' to selected South African municipalities in order to reduce the electricity demand.
- EEDSM interventions in eThekweni:
 - LED Traffic Lightings & LED Street lighting;
 - Building lighting; &
 - Wastewater treatment plants (pumps & motors).

eThekweni Health Unit H/Q Building

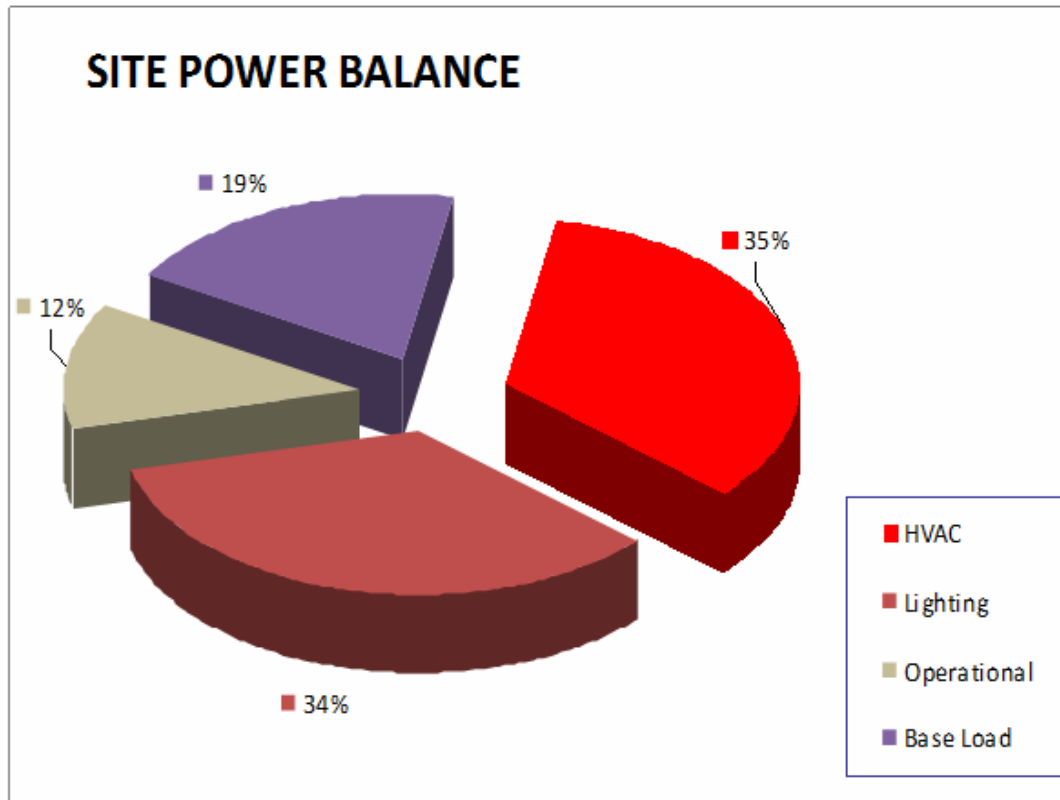
- Location: 9 K E Masinga Road, Durban.
- Floor Area: 11,200 sqm.
- 4 storey office block.
- 2 Laboratories.
- 1 Large Auditorium.
- Large storerooms incl. defunct cold store.
- 07h00 to 17h00 weekdays.
- XXX team members.

eThekweni Health Unit H/Q Building

- Collaboration:
 - Energy Office;
 - Health Unit;
 - Architecture Department (EBS);
 - SNA (Baseline and Project Management); &
 - Bobcon (Contractors).

eThekweni Health Unit H/Q Building

- Power consumed by various equipment



ENERGY USERS	KW
HVAC	88
Lighting	89
Operational	32
Base Load	50
TOTAL	259

Base-load make-up

- Water Heating.
- Refrigeration.
- Server and cooling.
- Machinery.

eThekweni Health Unit H/Q Building

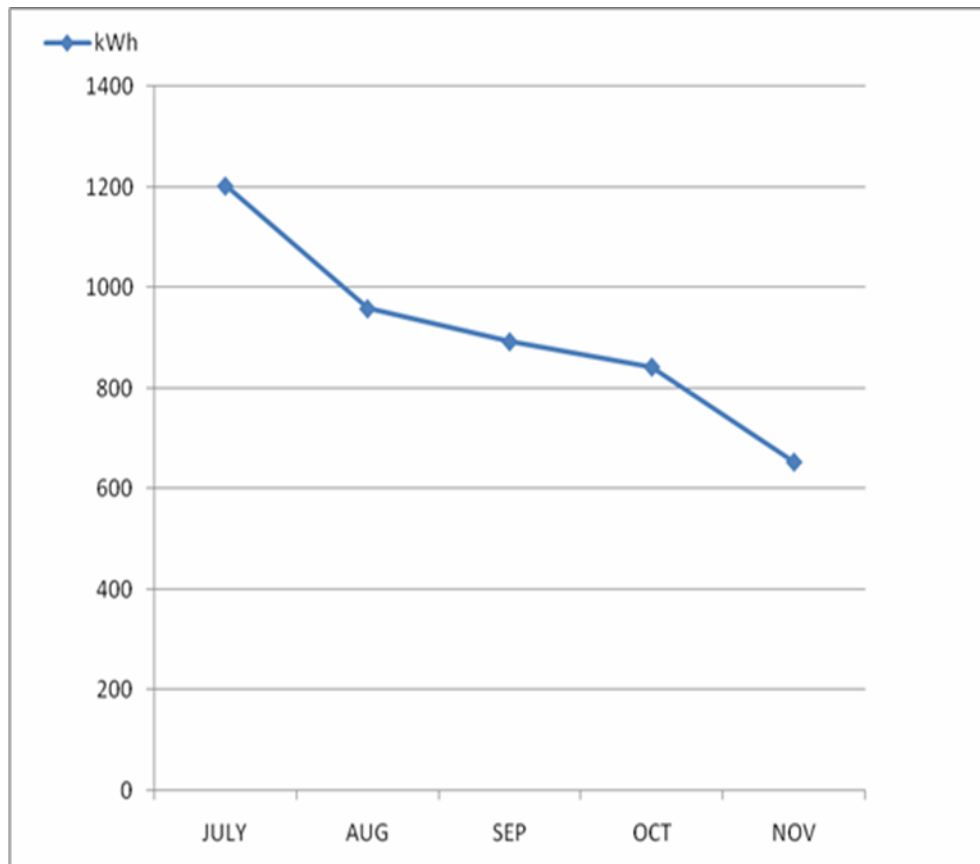
- Installation Assessment

Pre installation assessment	Post installation result
96.5% of lighting – outdated fluorescent lamps.	100% energy efficient task sensitive lighting.
Lighting controlled manually.	Occupancy sensors installed in 2 wings. Light sensors in 1 wing.
980 light fittings.	856 light fittings.
1812 lamps.	1711 lamps.

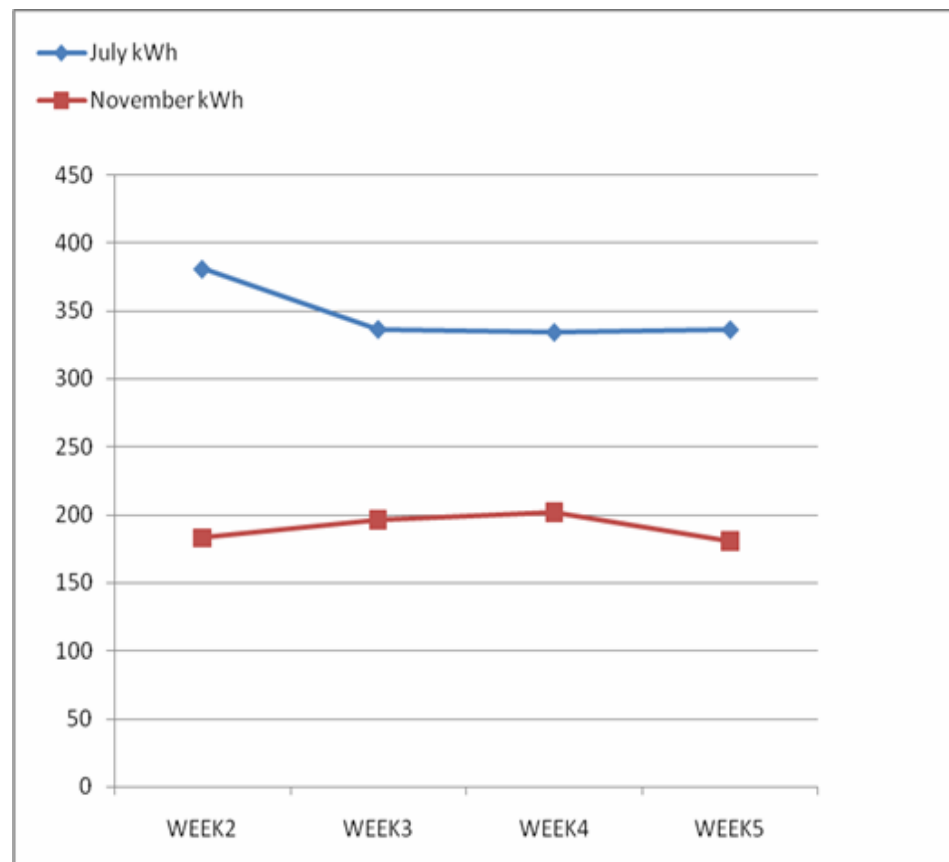
eThekweni Health Unit H/Q Building

- Intervention results:
 - Installation cost R 890,570.15 (ex. VAT);
 - Baseline costs R 137,512 (ex VAT);
 - R 224,000 saving on annual electricity bill;
 - 18% reduction in building peak load;
 - 172MWh reduction in annual consumption;
 - Simple payback period: 4 years.

eThekweni Health Unit H/Q Building



Monthly reduction: Lighting.



Weekly measured electricity.

eThekweni Health Unit H/Q Building

- Challenges:
 - Access to the building;
 - Shortage of materials due to strike;
 - Stoppage due to noise from construction;
 - Stoppage due to complaints about contractors;
 - Offices unavailable after working hours; &
 - Delayed payments to contractors.

eThekweni Health Unit H/Q Building

- Lessons learned:
 - Management buy-in as early as possible;
 - Continuous communication to staff;
 - Dedicated facility managers to be involved;
 - Contractors access to stock; &
 - Regular meetings to track progress.

eThekweni Health Unit H/Q Building

- Pictures



Office: 2 x 58w diffused fittings were replaced with 2 x 49w energy efficient fittings.

eThekweni Health Unit H/Q Building

- More pictures:



Ablution: 3 x 18w diffused fittings were replaced with 1 x 18w energy efficient down light.

eThekweni Team EE Awareness

ENERGY EFFICIENCY CAMPAIGN

If you set the room temperature at 1 degree higher this will save you around 5% of energy used for air conditioning.

Use air conditioning only when it is really hot and you will keep our city switched on!



Switch off to keep our city switched on!



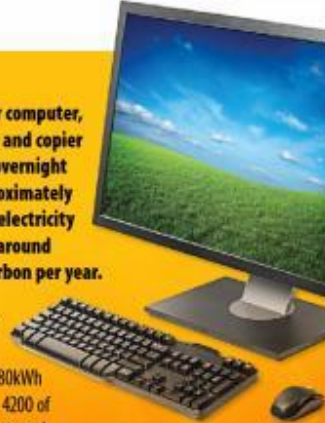
ENERGY EFFICIENCY CAMPAIGN

Leaving your computer, laser printer and copier on standby overnight wastes approximately 1680kWh of electricity and creates around 1731kg of carbon per year.

Remember the old 40W light bulbs? With 1680kWh you could burn 4200 of them for 10 hours each.

Switching them off when you leave the office will keep our city switched on!

Switch off to keep our city switched on!



ENERGY EFFICIENCY CAMPAIGN

Using natural light will not only save you electricity, but also increase productivity.

Remember to only switch the lights on when necessary and switch them off when you leave the office and you will keep our city switched on!



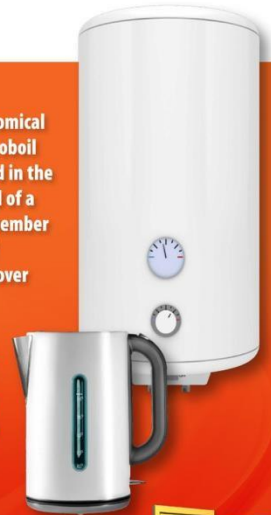
Switch off to keep our city switched on!



ENERGY EFFICIENCY CAMPAIGN

It is more economical to use the hydroboil that is provided in the kitchen instead of a kettle, but remember to switch it off overnight and over weekends.

If you have to use a kettle only boil as much water as you need and you can keep our city switched on!



Switch off to keep our city switched on!



Public facing EE Projects

- Education and Awareness;
- Shisa Solar;
- Low-pressure Solar Water Heaters;
- CFL roll-out (in collaboration with Eskom); &
- Private Sector Energy Efficiency Programme.

End.

Thank You.

Adelard.Karuhariwe@durban.gov.za