

CITY OF EKURHULENI
LED STREETLIGHT STUDY
(for UEMP)

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Where are we now?

- Procurement took place in accordance with the Municipal Finance Management Act
- Motla Engineering was successful and is appointed
- Expect study results by end June 2009
- Includes pilot installation of preferred technology

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Energy Efficiency

- **Defined by Illumination Engineering Society of SA as lamps with efficacy of more than 70 lumen per Watt**
- LED = 95 lumens / Watt before derating for driver, optical and thermal efficacies.
 - **So, LED = 95 lm/W x 90% driver x 85% optical x 95% thermal = 69lm/W**

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According to IESSA...

- Based on scientific consensus, that 8-10% of the generated electricity is used for electrical lighting in South Africa, IESSA acknowledges its responsibility to contribute towards solutions, which will reduce the energy consumption on lighting in all sectors.

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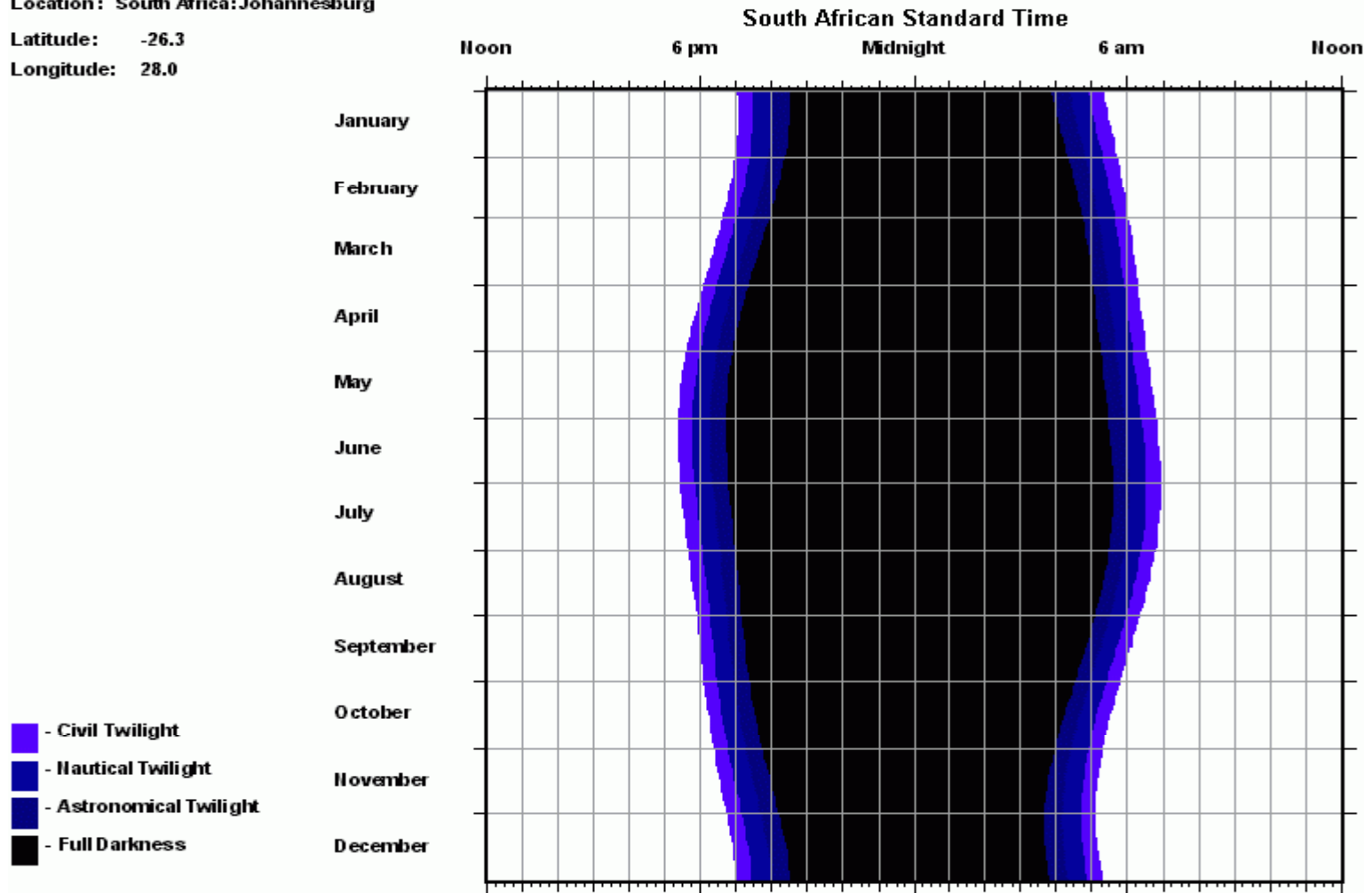
Johannesburg night time profile

Source: <http://www.hartrao.ac.za/other/sundial/sunriseset.html>

Location: South Africa:Johannesburg

Latitude: -26.3

Longitude: 28.0



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Preliminary financial indicators

(Subject to change as study is refined)

Light type		18W LED	38W LED	2x26WPL	125W MVE	250W HPS
Wattage	kW	0.018	0.038	0.052	0.125	0.25
units consumed per annum	kWh	71.9928	151.9848	207.9792	499.95	999.9
per annum	kg CO ₂	38.6601336	81.6158376	111.68483	268.47315	536.9463
Low demand season - cost	Rand	R 8.33	R 17.58	R 24.06	R 57.83	R 115.65
High demand season - cost	Rand	R 4.83	R 10.20	R 13.96	R 33.57	R 67.14
Total / Annum / Streetlight		R 13.16	R 27.78	R 38.02	R 91.39	R 182.79
Operational cost saving with 125W MVE as reference	Rand	R 78.23	R 63.61	R 53.37	R -	R -
Annual carbon credit @ 11 Eur/Ton CO ₂ with 125W MVE as reference	Euro	€ 2.48	€ 2.06	€ 1.72	€ -	€ -
Annual carbon credit @ 11 Eur/Ton CO ₂ with 125W MVE as reference	Rand	R 28.96	R 24.05	R 20.18	R -	R -
Per 7 years (??) - Income to financiers (??)	Rand	R 202.71	R 168.34	R 141.25	R -	R -

Typical cost per light fitting

Rand

R 6,500.00

R 8,500.00

Payback period per light fitting (excl. Carbon credit)

Years

83.0

133.626297

Labour, poles etc. excluded

Local products

- Beka – Schreder products (18W & 38W)
- Light-Be – Phillips products (28W – 110W)
- Genlux (Unknown)
- C2R 100W LED with SANS approval (official distributor unknown)

- CIE140 standard would be applicable for performance evaluation (spacing calculations etc.)
- SANS or IEC standards applicable for armature conformance (performance, quality etc.)

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Example found in

Cape Town



Before – 125W Mercury Vapour

Some notes:

- Uniformity compromised ??
- LED provide more white light than 125W MVE



After – 38W LED

Study still to consider the following:

- Comparison of various products
- Electronic calculations for spacing (busy sourcing the CIE140 software data files from various suppliers) before calculations can commence
- Maintenance, specifications, life-cycle costs
- More...

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